3Com® Corporation

PathBuilder™ S200 Series Switch Configuring with PAD/ATPAD

Notice

©1998 3Com Corporation
5400 Bayfront Plaza
Santa Clara, CA 95052-8145
(408) 326-5000
All rights reserved.
Printed in U.S.A.
Portions reprinted with the permission of Motorola, Inc.

Restricted Rights Notification for U.S. Government Users

The software (including firmware) addressed in this manual is provided to the U.S. Government under agreement which grants the government the minimum “restricted rights” in the software, as defined in the Federal Acquisition Regulation (FAR) or the Defense Federal Acquisition Regulation Supplement (DFARS), whichever is applicable.

If the software is procured for use by the Department of Defense, the following legend applies:

Restricted Rights Legend

Use, duplication, or disclosure by the Government
is subject to restrictions as set forth in
subparagraph (c)(1)(ii) of the
Rights in Technical Data and Computer Software
clause at DFARS 252.227-7013.

If the software is procured for use by any U.S. Government entity other than the Department of Defense, the following notice applies:

Notice

Notwithstanding any other lease or license agreement that may pertain to, or accompany the delivery of, this computer software, the rights of the Government regarding its use, reproduction, and disclosure are as set forth in FAR 52.227-19(C).

Unpublished - rights reserved under the copyright laws of the United States.

Proprietary Material

Information and software in this document are proprietary to 3Com (or its Suppliers) and without the express prior permission of an officer of 3Com, may not be copied, reproduced, disclosed to others, published, or used, in whole or in part, for any purpose other than that for which it is being made available. Use of software described in this document is subject to the terms and conditions of the 3Com Software License Agreement.

This document is for information purposes only and is subject to change without notice.

Part No. T0110, Rev. A
First Printing October 1998

Manual is current for Release 5.2M.

Contents

About Packet Assembler/Disassembler 2
Typical Applications 3
PAD Port Configuration 4
Configuring the PAD Port 7
PAD Port Configuration for Autocalling 20
PAD Port Configuration for Autospeed 22
PAD XON/OFF Support Using X.25 Interrupt Packets 23
PAD Prompt Table Record 25
PAD Prompt Table Record Parameters 26
PAD Profile Table Record 27
PAD Profile Table Record Parameters 29
Copying PAD Profile Tables into a Configuration 44
Remote PAD Parameter Table Record 49
Remote PAD Parameter Table Record Parameters 50
Detailed PAD Port Statistics 53
ATPAD Ports 57
ATPAD Operation 58
Configuration 61
ATPAD Port Statistics 70

Configuring PAD/ATPAD Ports

Overview

Introduction

This manual describes the PAD and ATPAD port configurations used on PathBuilder S200 series switches. It includes explanations of both PAD port types, commands that can be used, and how to configure a node for either PAD or ATPAD operation.

Before You Begin

Before you can configure parameters, you must log on to the local node's control terminal port. Refer to the *Configuration Basics Guide* for CTP procedures.

In This Manual

Topic	See Page
About Packet Assembler/Disassembler	2
Typical Applications	3
PAD Port Configuration	4
Configuring the PAD Port	7
PAD Port Configuration for Autocalling	20
PAD Port Configuration for Autospeed	22
PAD XON/OFF Support Using X.25 Interrupt Packets	23
PAD Prompt Table Record	25
PAD Prompt Table Record Parameters	26
PAD Profile Table Record	27
PAD Profile Table Record Parameters	29
Copying PAD Profile Tables into a Configuration	44
Remote PAD Parameter Table Record	49
Remote PAD Parameter Table Record Parameters	50
Detailed PAD Port Statistics	53
ATPAD Ports	57
ATPAD Operation	58
Configuration	61
ATPAD Port Statistics	70

About Packet Assembler/Disassembler

What is a PAD?

A Packet Assembler/Disassembler, or PAD for short, gives you network access and ensures compatibility between different hosts and terminals and a packet switched network. A PAD does this by packetizing data (Assembling), sent to the PAD from a terminal device, and then routing that packetized data through a packet switching node and onto the network.

A PAD can also ‘depacketize’ (Disassemble) data before it is sent to its intended destination (host or terminal).

What Is a PAD Port?

A PAD port lets you transmit asynchronous data. When setting the Port Type to PAD, the remainder of the Port Record will contain only those parameters needed for configuring the PAD port.

In this record, you can configure a PAD port for:

- Autocalling
- Autospeed
- Address blanking

What is an ATPAD

The ATPAD is an asynchronous port that lets you make and clear X.25 calls using a restricted set of Hayes AT commands.

Features

PAD ports provide these features:

- A set of commands to make and clear calls
- A set of response codes that indicate the generation condition
- Other features such as configurable control characters, data forwarding criteria, and answer mode for tailoring the ATPAD to your application
- Support for network parity, response delay, and DTR timeout
- Configurable Escape Sequence Timer
- Automatic or manual answer
- Four stored X.25 addresses (mnemonics) accessible by the ATDSn command
- Control signal or XON/XOFF flow control
- Configuration of operating parameters via the CTP

Typical Applications

Introduction

You can access the PAD with PC scripts. The PC scripts use AT commands to make calls through an X.25 network.

Example

Figure 1 shows the use of modems in an application. It also shows how the PathBuilder S200 series switch with the PAD port replaces the modems and concentrates mixed data types on a single access line. A PC runs purchased script files that use AT commands.

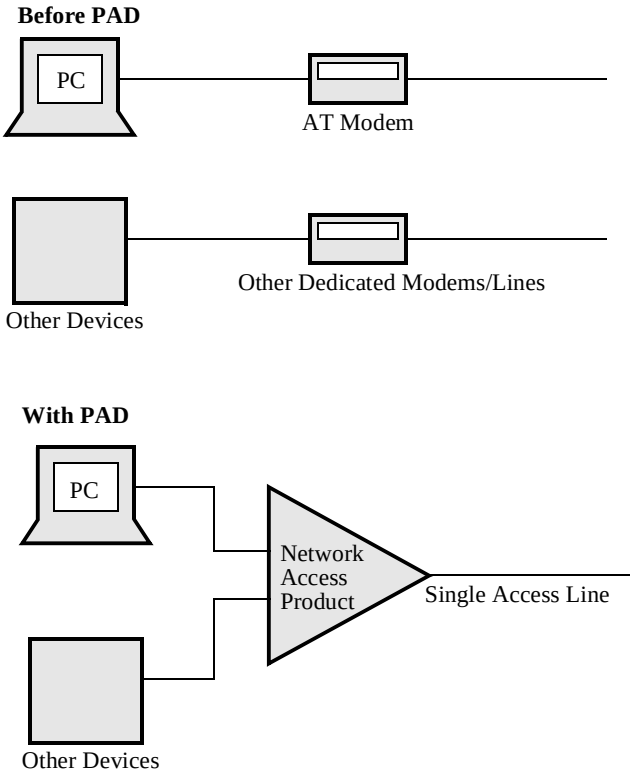

Figure 1. Topologies with and Without the PAD

PAD Port Configuration

Introduction

In order to configure a PAD port, you must first access the CTP on your PathBuilder S200 series switch.

■ Note

Refer to the *Configuration Basics Guide* for CTP procedures.

PAD Port Configuration Record

Figure 2 shows the PAD port configuration parameters.

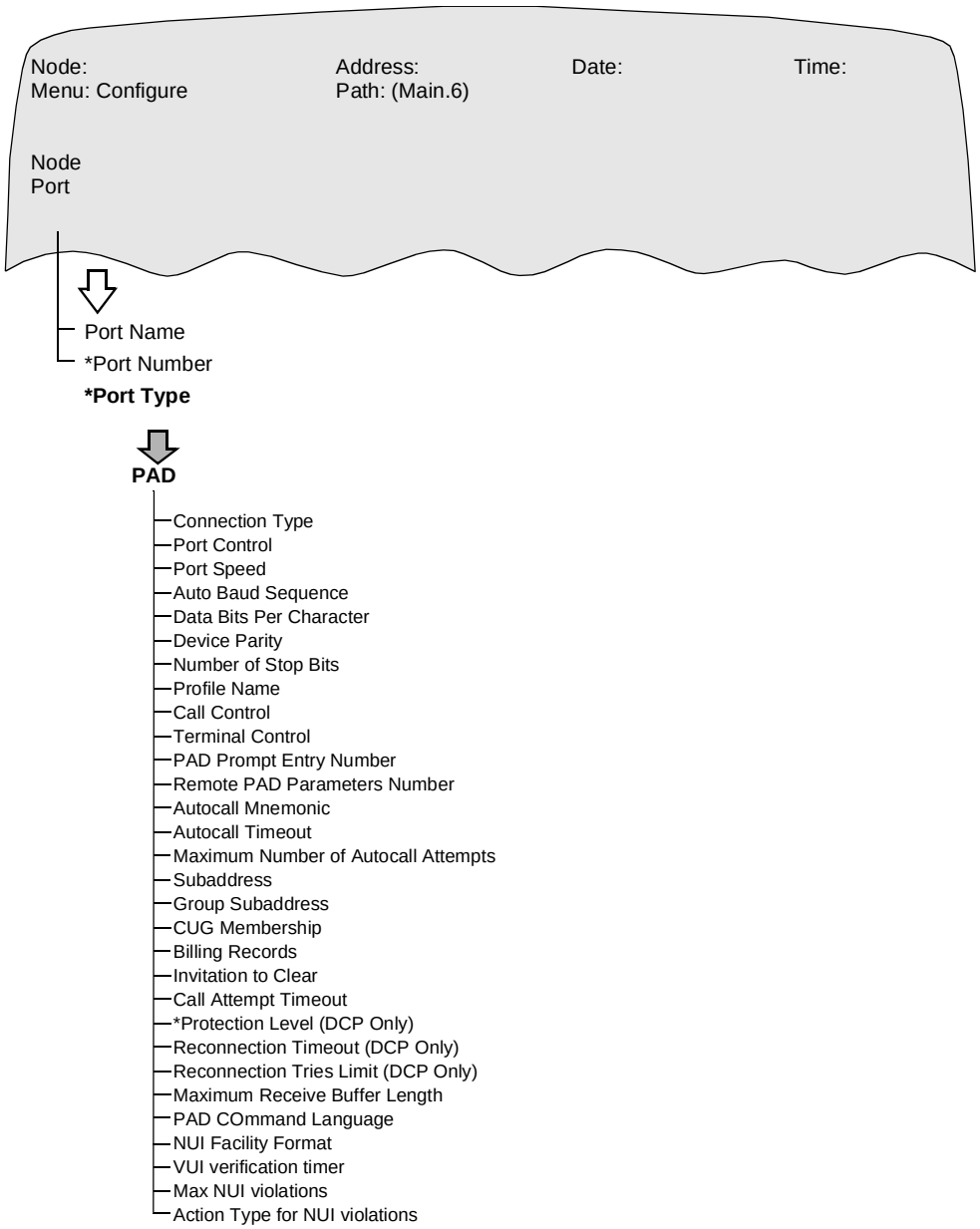

Figure 2. PAD Port Record

Guidelines

When the Port Type is PAD, follow these guidelines for configuring parameter values of the other port parameters:

If You Specify or Set...	*Then...*
Profile Name	The entry must exist in the PAD Profile Table.
Call Control to AUTO or AUTC	Autocall Mnemonic must have a value.
Call Control = AUTO and (Port Record) Connection Type = SIMP,	Maximum Number of Autocall Attempts must be 0.
Ports as having Call Control = AUTO	Configure each port to have different values for Autocall Timeout.
Terminal Control to PASS	An NUI Table entry must exist.
Terminal Control to CUG	An entry for CUG Membership must exist.
PAD Prompt Entry Number	The entry must exist in the PAD Prompt table.
Remote PAD Parameters Number	The entry must exist in the Remote PAD Parameters Table.
Autocall Mnemonic	The entry must exist in the Mnemonic Table.
A Subaddress value	It should equal the port number.
Billing Records as On	A Billing Printer Mnemonic must be specified in the Mnemonic Table.

Other Tables You Must Configure

If your port type is PAD Port, you must also configure parameters in the:

- PAD Profile Table
- PAD Prompt Table

See those sections for information about how to configure those table records.

Accessing the Record

Follow these steps to access the PAD Port Record:

Step	*Action*	*Result*
1	Select **Configure**, from the CTP Main menu.	The Configure menu appears.
2	Select **Port** from the Configure menu and configure the Port Number in the Port Record.	The prompt for the Port Number appears
3	Enter port type: **PAD**	The first parameter for PAD Port Type appears, as shown in Figure 2.
4	Enter each parameter value and save the record. Press **<ESC>** to return to the Configure menu.	

Configuring the PAD Port

Introduction

This section describes the PAD port parameters. Any parameter with an asterisk (*) requires a Node boot.

Parameters

From the PAD port record, you can configure these parameters:

Connection Type

Range:	SIMP, DTR, DTRD, DTRP, DIMO, DIMOa, DIMOb, EMRI, EMDC, EMCDIO
Default:	SIMP
Description:	Specifies the type of control signal handshaking that is required before logical connections can be made to this port. See the table below for information about when to use a connection type.

Use Connection Type	*When...*
SIMP (Simple)	A terminal is wired to the port with a cable that has a minimum of conductors (so most control signals are missing). Such cabling provides only ground, transmit, and receive data. Control signals from the port are maintained high. If data restraint by control signal is enabled, the CTS lead changes as required.
DTR	The device connected to the port provides DTR to maintain the EIA connection. Remote users calling the device through a PAD port know if the device is disconnected or powered down, because the call is not completed.
DTRD	DTR signal required. DCD, DSR, CTS drop for 1 second between calls and then return to idle state. During the control signal drop, the port is unable to receive calls.
DTRP	• DTR is passed end-to-end. • Port raises CTS and DCD when it raises DSR. The port does not monitor RTS. • EIA Monitor supports DTRP. • DTRP doesn't support PVC connections. • Configure PAD ports as an answer/originate pair by selecting auto calling on the originate end. • Supports primary handshaking only (DTR/DSR) and should not be used with tail circuit modems.

Use Connection Type	***When...*** *(continued)*
DIMO	A crossover cable attaches a dial modem to the port, and whose handshake uses modem control signals as calls are made. Types of DIMO operation are: • Dial In: Calls received from the telephone network. • Dial Out: Calls received from the port. • Dial In/Dial Out Collision: Calls received simultaneously from the telephone network and the port.
DIMOa	Same as DIMO but DSR is never raised on incoming call.
DIMOb	Same as DIMO but DSR follows DTR on incoming calls.
EMRI	A port connects to a host computer and replaces a modem. The port emulates a dial modem with Ring Indicator (RI).
EMDC	A port connects to a host computer and replaces a modem. The port emulates a dial modem with Data Carrier Detect (DCD) used to signal an incoming call.
EMCDIO	A port connects to an asynchronous host computer and emulates a modem with DCD for incoming and outgoing calls.

Port Control

Range:	NONE, MB
Default:	NONE
Description:	MB enables the make-busy feature for the specified port; disabling the port raises pin 22 only when Connection Type = DIMO, DIMOa, DIMOb, DTR, DTRD, or SIMP. ■ **Note** NONE (disables the Make Busy feature)

Port Speed

Range:	50, 75, 100, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 75/1200, AUTO
Default:	9600
Description:	Specifies the port speed in bits per second. • Port speed is set by this parameter although the PAD Profile Table can specify a PAD port's characteristics. • When 134 is selected, the actual speed is 134.5 bps. • Split speed (75/1200) can be configured only on 6500***PLUS*** Processor and Asynchronous I/O Cards.

Auto Baud Sequence

Range:	CR_ONLY, CR_DOT_CR, TYMNET, TELENET
Default:	CR_ONLY
Description:	Specifies the character sequence used for autospeed recognition for these autospeed ports: • PAD ports with Port Speed = AUTO • Device Parity = Auto • Data Bits Per Character = 7: – CR_Only: Autospeed on <CR> – CR_DOT_CR: Autospeed on <CR>.<CR> – TYMNET: Autospeed on the letter “a” (must be lower case) – TELENET: Autospeed on <CR><CR> for 1200 bps or lower and @ <CR> for 2400 bps or higher The speeds are supported on all PathBuilder S200 series switches. The autospeeds of 14.4 Kbps, 19.2 Kbps, 28.8 Kbps, and 38.4 Kbps are not supported on UIO/AIO cards. • Used to detect and adapt to the speed and parity of a terminal configured as 7 bit plus parity. • Select CR_DOT_CR if the connecting terminal's Data Bits per Character (7 or 8) is unknown or changes (typical for dial-in applications).

Data Bits per Character

Range:	5 to 8
Default:	8
Description:	Sets the bits per character. This value must match the number of bits per character used by the attached device.

Device Parity

Range:	NONE, SPAC, MARK, EVEN, ODD, AUTO
Default:	NONE
Description:	Determines the type of parity the PAD port generates and returned from the attached device: • NONE: With 7-bit data or when the data is 7 bits with parity, and the parity bit is passed to the remote end as the eighth bit. • SPAC: Space parity. • MARK: Mark parity. • EVEN: Even parity. • ODD: Odd parity. • AUTO: When the port is configured for autospeed. This supports 7 bits odd, 7 bits even, and 8 bits no parity.

Number of Stop Bits

Range:	1, 1.5, 2
Default:	1
Description:	Specifies the number of Stop Bits that the PAD port generates when it sends data to the attached device. This parameter has no effect on data received from the attached device.

Profile Name

Range:	0 to 8 alphanumeric characters
Default:	0
Description:	The name of the PAD Profile Table used by this port. Choose from one of the names in PAD Profile Table or 12 Default Profiles.

Call Control

Range:	NONE, AUTO, AUTC, PCUD, IBAR, OBAR, MNEM, TMNEM
Default:	NONE
Description:	Specifies PAD behavior and limitations when making and receiving calls: • NONE: No options • AUTO: Automatically places a call when an EIA connection is established • AUTC: Automatically places a call when <CR> is received • PCUD: Pass Call User Data (CUD) to user profile for no service signals • IBAR: Bar calls inbound from PAD user • OBAR: Bar calls outbound to PAD user • MNEM: Place only mnemonic calls • TMNEM: Call mnemonic (maximum 16 alphanumeric characters) that is not resolved in the local node. This option cannot be summed with any of the above options. If you sum AUTO+IBAR+PCUD: • Automatic calling is in effect. • Call User Data passes from the user with no service signals. • Incoming calls are not accepted by that user. ■ **Note** Do not sum IBAR and OBAR because, when combined, they render the port useless.

Terminal Control

Range:	NONE, PASS, LIM, CUG, LCPY, 7BIT, NADD, X.28, CNUI, CUGOA, BMSG, ADDR, FRCB, CUGIA
Default:	NONE
Description:	Specifies options for the attached device: • NONE: No option specified • PASS: A password is required (configured in the NUI/ Password Table). • LIM: X.28 mode is limited to CALL and CLR commands. • CUG: Check Closed User Group (CUG); otherwise the CUG passes transparently. • LCPY: Allow local copying to this PAD port • 7BIT: Allows an internal 7-bit representation of characters to determine if extra processing is needed. – Example: The line delete character is hexadecimal value 18, and the input character received by the PAD is hexadecimal 98. If 7BIT is not selected, the current input line is not deleted. If 7BIT is selected, the input line is deleted as the internal representation of the character would only be 7 bits. • NADD: Prevents PAD port from receiving calling address and facility's service signals • X28: Automatically returns from X.28 mode to PAD mode after sending the X.28 commands • CNUI: Provides Centralized Network User Identification verification. • CUGOA: Subscribe to Closed User Group with Outgoing Access. • BMSG: Displays the PAD Bulletin/Banner Message. • ADDR: The calling address is not shown. • FRCB: Connects to a French Cartes Bancaires (banking card) device. • CUGIA: Checks the CUG but allows incoming access; otherwise CUG data is passed transparently. ■ **Note** Use summing to combine several parameter values. CUGOA and CUG or CUG and CUGIA cannot be used together.

PAD Prompt Entry Number

Range:	0 to 8
Default:	0
Description:	Specifies the customized prompt from the PAD Prompt Table. This parameter is ignored when Terminal Control = PASS and the PAD Prompt Entry Number is taken from the NUI/Password Table entry.

Remote PAD Parameters Number

Range:	0 to 6
Default:	0
Description:	Specifies the Remote PAD Parameter Table entry number that is used by the remote PAD to update its X.3 characteristics when connected to this port. ■ **Note** No updates will be sent if this parameter is set to zero (0).

Autocall Mnemonic

Range:	0 to 8 alphanumeric characters
Default:	N/A
Description:	The mnemonic name that is used when the port is configured for autocalling. • A corresponding entry must be made in the Mnemonic Table. • Use summing to combine several parameter values.

Autocall Timeout (sec)

Range:	5 to 255
Default:	10
Description:	Specifies the time (in seconds) between call attempts when autocalling.

Maximum Number of Autocall Attempts

Range:	0 to 255
Default:	4
Description:	Specifies the number of times the PAD port attempts to call, when autocalling is enabled. • When the limit is reached, the port stops attempting to make a call. • For unlimited call attempts, set to 0.

Subaddress

Range:	0 to 3 digits
Default:	port #
Description:	Specifies the subaddress for this PAD port. Incoming calls from the network with a network address consisting of the Node Address specified in the Node Record and this subaddress, arrive at this PAD port.

Group Subaddress

Range:	0 to 3 digits
Default:	00
Description:	Specifies a port subaddress that several PAD ports share. Incoming calls with this subaddress are routed to one of several ports sharing this subaddress. • Use the space bar to blank the parameter value. • To disable this parameter, set to (blank).

CUG Membership

Range:	0 to 8 two-digit numbers
Default:	--,--,--,--,--,--,--,--
Description:	Specifies a port's membership in up to 8 Closed User Groups (CUGs). • Each CUG membership must be a two-digit number (00 to 99), separated from other groups by a comma. • To delete a CUG, press the minus key twice for each group.

Billing Records

Range:	OFF, ON
Default:	OFF
Description:	• ON: generates billing records for all calls to and from this port and for failed calls from this port. • OFF: generates no billing records. This only works after you have configured Billing Printer Mnemonic in the Node record.

Invitation to clear

Range:	NONE, CLRWO, CLRWD
Default:	CLRWO
Description:	Specifies how an Invitation to Clear packet is handled when received: • NONE: Do nothing. • CLRWO: Clear Call without performing EIA disconnect. • CLRWD: Clear Call and perform EIA disconnect.

Call Accept Timeout (sec)

Range:	0 to 255
Default:	0
Description:	Specifies the time (in seconds) that the PAD port can be idle (no calls) before it is disconnected. 0 disables the timer. The PAD Port Call Accept Timeout is used to avoid disconnection of a dialed connection during short periods of inactivity.

*Protection Level

Range:	NONE, CP_ONLY, FULL_DCP
Default:	NONE
Description:	Specifies how Data Connection Protection is implemented for this port: • NONE: The feature is turned off. • CP_ONLY: Connection protection only. • FULL_DCP: Full data and connection protection. Valid only when the Data Connection Protection Option has been purchased for this node. ■ **Note** Changes to this parameter require a Node Boot to take effect.

Reconnection Timeout

Range:	1 to 128
Default:	2
Description:	• Specifies how many seconds the Data Connection Protection feature waits between reconnection attempts. • The call originator determines the value. If symmetric operation is required, the Reconnection Timeout and the Reconnection Tries limit should be equal. Valid only when the Data Connection Protection Option has been purchased for this node.

Reconnection Tries Limit

Range:	0 to 127
Default:	4
Description:	• Specifies the number of times that the Data Connection Protection feature attempts to reconnect before clearing the call. • The call originator determines the value. If 0 is entered, there will be no attempt to reconnect. If symmetric operation is required, the Reconnection Timeout and the Reconnection Tries limit should be equal. Valid only when the Data Connection Protection Option has been purchased for this node.

Maximum Receive Buffer Length

Range:	1 to 128 (2000 with TPA 2K Frame Size CSK enabled.)
Default:	128
Description:	Specifies the number of characters received by the driver before forwarding the packet. ■ **Note** If a port is configured as Transparent Polled Async PAD and CSK for TPA 2K Frame Size is enabled, the maximum frame size for this parameter is automatically set to 2K.

Called DTE Address

Range:	0 to 15 decimal digits.
Default:	00000000
Description:	Specifies the Called DTE Address for packets with call mnemonic. ■ **Note** Use the space character to blank the field.

Calling DTE Identifier

Range:	0 to 8 alphanumeric characters.
Default:	(blank)
Description:	Specifies the Calling DTE Identifier for packets with call mnemonic. ■ **Note** Use the space character to blank the field.

Calling DTE Password

Range:	0 to 8 alphanumeric characters.
Default:	(blank)
Description:	Specifies the Calling DTE Password for packets with call mnemonic. ■ **Note** Use the space character to blank the field.

PAD Command Language

Range:	CCITT, DPN
Default:	CCITT
Description:	Specifies the language used for PAD commands. • CCITT: X.28 CCITT • DPN: DPN ITI

NUI Facility Format

Range:	ODPN, NDPN, 1992_DPN
Default:	ODPN
Description:	Specifies the NUI facility field format. • ODPN: Specifies the Old DPN format • NDPN: Specifies the New DPN format • 1992_DPN: Specifies the 1992 NUI format

NUI verification timer

Range:	5 to 180
Default:	60
Description:	Specifies the NUI verification timer in seconds. When this timer expires the call is cleared.

Max NUI violations

Range:	0 to 10
Default:	3
Description:	The maximum number of successive NUI verification failures that can be tolerated when making verification attempts through a PAD port. ■ **Note** Refer to the “Action Type for NUI violations” if the Max NUI Violations are reached.

Action Type for NUI violations

Range:	NONE, DISC, DEGR, LOCK
Default:	NONE
Description:	This specifies the course of action to be taken if the NUI violations exceed the configured threshold count. This parameter is effective only if the Port Control parameter is set to CNUI. • NONE: No action is taken. • DISC: The port is disconnected. • DEGR: The port is busied-out for one minute and then is re-enabled. • LOCK: The port is disabled and operator intervention is required to enable the port.

PAD Port Configuration for Autocalling

Introduction

You must configure several parameters within the PAD port record specifically for autocalling.

- Call Control (set to AUTO or AUTC)
- Autocall Mnemonic (this must be defined in the Mnemonic Table)
- Autocall Timeout (sec)
- Maximum Number of Autocall Attempts

Initiating an AutoCall

An autocall is initiated in one of two ways.

a) The terminal connects to the port (Call Control = AUTO and Connection Type is not SIMP). If the call attempt fails, then the PAD initiates another call after a time specified in the parameter Autocall Timeout. The parameter Number of Autocall Tries specifies the number of times the PAD tries to make a connection. The PAD then stops the process until the EIA input signals are lowered and then raised.

b) A call is initiated when the terminal connects to the port and you press **<CR> (Call Control = AUTC).** If the call attempt fails, you must reenter **<CR>** before the PAD can attempt another call.

Mnemonic Addressing

You can configure a port for autocalling to have the call automatically placed at power up and routed with a mnemonic. This capability is useful when you are limited to a single host application and are always calling the same address.

Autocalling uses the PathBuilder S200 series switch mnemonic addressing function. As with normal mnemonic addressing:

- A Mnemonic Table entry must have a corresponding Route Selection Table entry.
- In addition, the port that is initiating the call must be configured for Autocalling. This is done by configuring the parameter Call Control (in the Port Record) to either AUTO or AUTC.
  - AUTO specifies that the call is attempted when the EIA handshake is complete. When Connection Type=SIMP, autocalls are made on power up or port boot.
  - AUTC specifies that the call is attempted when the EIA handshake is complete and a **<CR>** is entered.

SDLC Mnemonic Addressing

Calls placed in a port configured for SDLC must use the mnemonic calling feature.

Figure 3 shows the configuration process for calls on SDLC ports. Station 2, Port 4 in Node 100 is configured to call Station 3, Port 3 in Node 200.

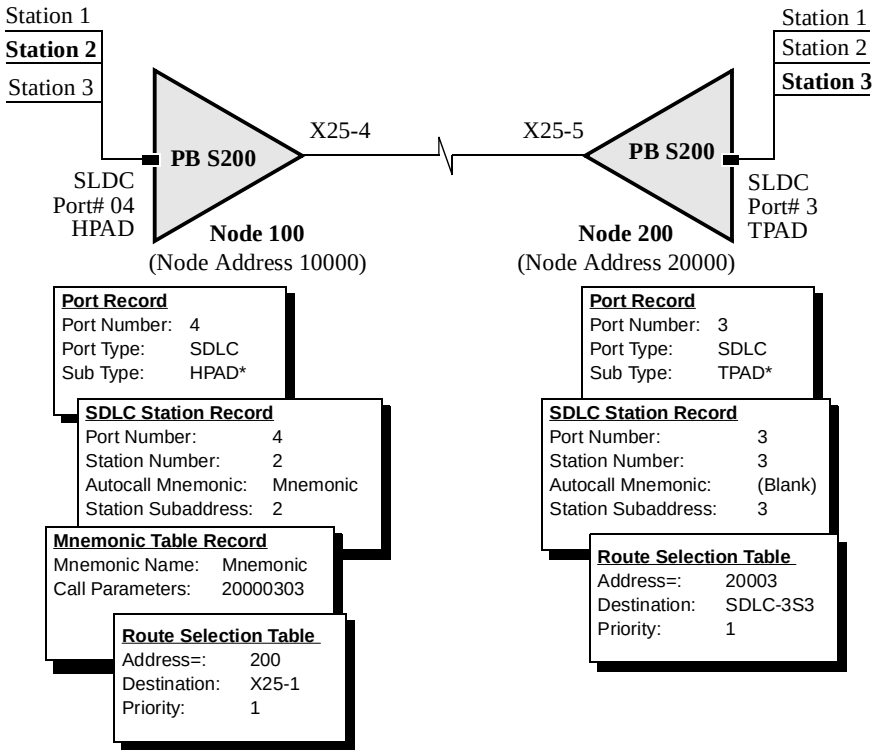

Figure 3. SDLC Mnemonic Autocall Addressing

■ Note

These configuration records and parameters pertain only to SDLC Mnemonic Autocall Addressing. There are also others that must be configured.

PAD Port Configuration for Autospeed

Introduction

Autospeed is a convenient way to configure a PAD port's speed, especially when you want a mix of terminal speeds. For example, autospeed is useful when the PAD port is connected to a modem that is being called by devices with different speeds.

Implementing Autospeed

To implement autospeed, set the Port Record parameter Port Speed = AUTO. When the device calls the port, the port determines the speed of the device and programs its I/O drivers to match the device's speed.

Auto Baud Sequence Parameter

A related parameter that affects Autospeed is the Auto Baud Sequence (in the PAD Port Record). This parameter specifies the Autospeed Recognition Character that the port uses to set the correct speed. These are the settings available under the Auto Baud Sequence parameter:

- CR_Only: Autospeed on <CR>.
- CR_DOT_CR: Autospeed on <CR>.<CR>.
- TYMNET: Autospeed on the letter “a” (must be lower case).
- TELENET: Autospeed on <CR><CR> for 1200 bps or lower and @ <CR> for 2400 bps or higher.

The default is <CR>. The autobaud feature is extended to support 14.4 Kbps, 19.2 Kbps, 28.8 Kbps, and 38.4 Kbps for all autospeed recognition characters. These speeds are not supported on the UIO or AIO cards.

Autospeed Inter-Character Delay

Inter-Character Delay is the transmission time interval between characters. For example, Figure 4 shows the autospeed inter-character delay applied to the CR_DOT_CR sequence presented above.

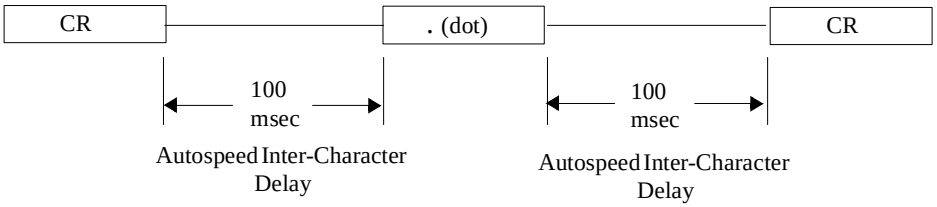

Figure 4. Autospeed Inter-Character Delay

Reduced Autospeed Inter-Character Delay

When using a dialup modem with a POS terminal or PC to send an Autobaud Sequence, problems may occur if the inter-character delay applied to that sequence is less than 180 msec. To overcome this, you must enter a CSK (5ERWXW2F76XHLTTUUZC3) to reduce the inter-character processing time to 100 msec.

■ **Note**

Reducing the autospeed inter-character delay also has the effect of increasing the minimum supported autospeed to 300 bits/sec.

PAD XON/OFF Support Using X.25 Interrupt Packets

What is It?

There is a Customer Software Key (CSK) that enables the transmission of XON/XOFF asynchronous data characters across a Public Data Network (PDN) using X.25 Interrupt packets.

This improves the transmission of flow control information between local and remote PAD ports on PathBuilder S200 series switches. Since X.25 Interrupt packets travel at a higher priority through the PDN, flow control information between PAD ports is communicated more thoroughly by letting you control the starting and stopping of the asynchronous data characters stream.

How It Works

By enabling the CSK for this feature whenever a PathBuilder S200 series switch PAD port receives an XON or XOFF flow control character from a user terminal or networking device, the XON/OFF enhancement sends the flow control characters across the PDN as X.25 Interrupt packets for faster transmission to the remote PAD port.

For example, as shown in Figure 5, when User 1 wants to stop User 2 from sending information, User 1 sends an XOFF character to the PAD port on the local PathBuilder S200 series switch. Then the local PathBuilder S200 series switch sends an X.25 Interrupt Packet to the remote node on the other side of the network, where the XOFF character is passed on to User 2. This stops User 2 from sending anymore data.

To let User 2 send information again, User 1 sends an XON character into the PAD port on the local PathBuilder S200 series switch, which sends an X.25 Interrupt Packet to the other node, and the XON character is passed on to User 2. This allows User 2 to begin sending data again.

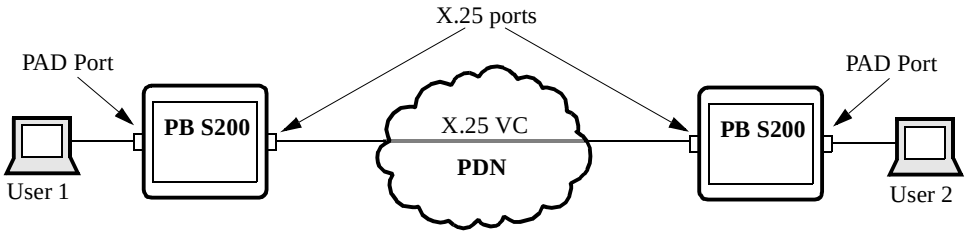

Figure 5. Example of Transmitting XON/OFF Frames Across PDN with X.25 Interrupt Packets

■ Note

The user devices shown in Figure 5 can be networking devices or asynchronous user terminals. Remember that the CSK for this feature must be enabled in order to transmit flow control characters as X.25 Interrupt packets. If the CSK is not enabled, the feature is not supported.

Also, for this feature to work, user devices at both ends of the network must be connected to PathBuilder S200 series switches.

Set the PAD Profile record parameters Device Flow Control and PAD Data Restraint to 1 for both PAD ports. Enabling the PAD Enhancement CSK.

To enable this CSK

Complete these steps to enable the XON/XOFF CSK:

Step	*Action*
1	Select **Configure** from the CTP Main menu.
2	Select **Software Key Table** from the Configure menu.
3	Press Return to access the Key Value field and enter the CSK number: **BGMV4HE3EGJCRFETYKH3**
4	Perform a Node boot to implement your changes.

PAD Prompt Table Record

Introduction

You can change the PAD prompt which appears when a terminal connects to a PathBuilder S200 series switch and is in Command Mode. The default prompt is an asterisk (*). You use the PAD Prompt Table to change the parameter.

What You See in This Record

Figure 6 shows how the PAD Prompt Table Record and its configuration parameters fit into the PathBuilder S200 series switch menu hierarchy.

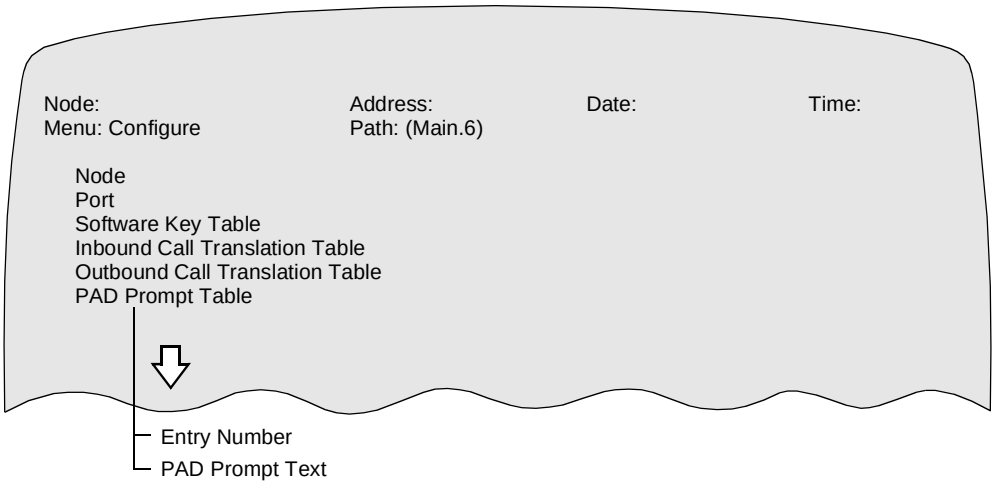

Figure 6. PAD Prompt Table Record

Before You Begin

Before you can configure parameters, you must log on to the local node's control terminal port.

Accessing the PAD Prompt Table Record

Follow these steps to access the PAD Prompt Table record:

Step	*Action*	*Result*
1	Select **Configure** from the CTP Main menu.	The Configure menu appears.
2	Select **PAD Prompt Table** from the Configure menu.	The PAD Prompt Table and its parameters appear. A prompt appears asking you to configure the next parameter.
3	Enter the parameter values.	
4	Press **<ESC>** to return to the Configure menu after you have configured all parameters.	

PAD Prompt Table Record Parameters

Introduction

This section describes the PAD Prompt Table parameters.

Parameters

From the PAD Prompt Table Record, you can configure these parameters (with the exception of Entry Number):

Entry Number

Range:	1 to 8
Default:	1
Description:	Identifies the particular PAD Prompt Table entry being configured by the other parameter in the record. This parameter is not configurable.

PAD Prompt Text

Range:	0 to 1023 alphanumeric characters
Default:	N/A
Description:	This text appears in place of the default PAD prompt asterisk (*). Enter the PAD prompt as a series of ASCII characters, terminated by a **<CR>**. Use these special characters to display information about the PAD Prompt text. If the character following the (%) symbol is not a special character, both the (%) and these character are discarded. • A: Node address • C: Channel number • G: Group subaddress • N: Node name • P: Port number • S: Subaddress • T: Time • V: Software revision Enter the caret **(^^)** twice (it is discarded otherwise) as an escape character to tell the PAD to send control characters. The character following the caret is converted to a control character and is sent to the PAD port for output.

PAD Profile Table Record

Introduction

The PAD Profile Table Record specifies the profile for a single PAD Port, in the local node. Many other PAD ports can also use the same PAD Profile Table Record to ensure that all PAD Ports have the same characteristics. You can configure up to 16 PAD profiles.

What You See In This Record

Figure 7 shows how the PAD Profile Table Record and its configuration parameters fit into the PathBuilder S200 series switch menu hierarchy.

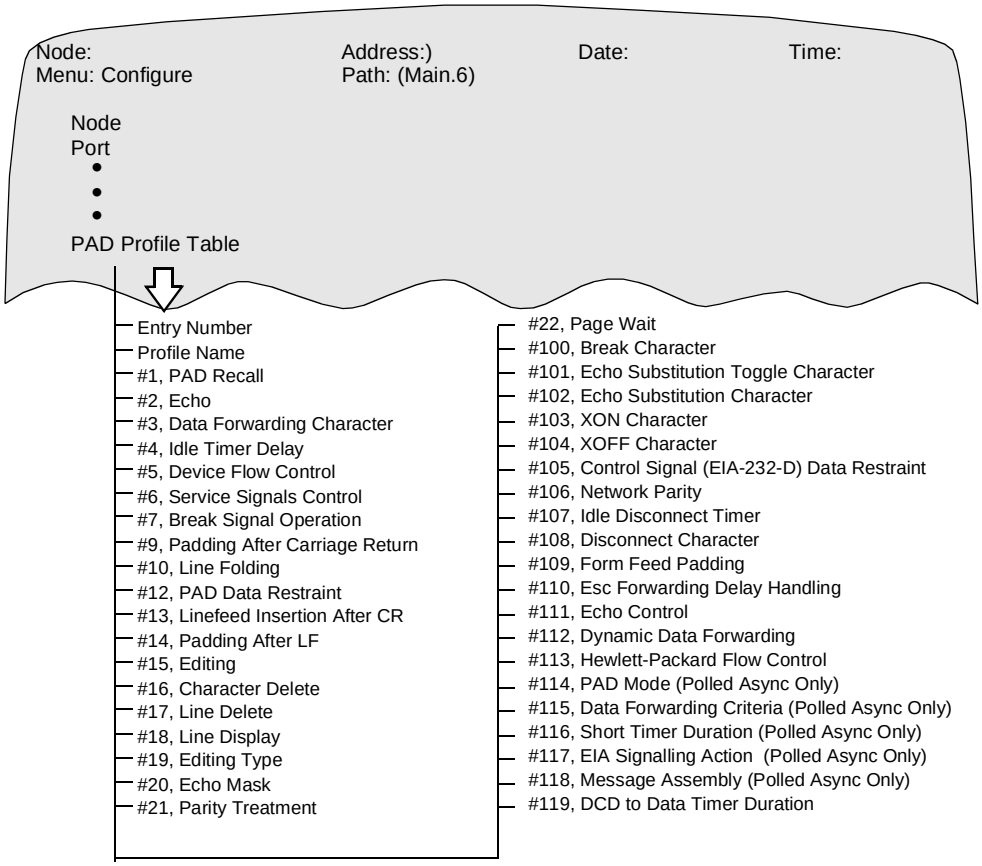

Figure 7. PAD Profile Table Record

Before You Begin

Before you can configure parameters, you must log on to the local node's control terminal port. Refer to the *Configuration Basics Guide* for CTP procedures.

Configuration Guidelines

When you configure the PAD Profile Table Record, use these guidelines:

- No blank Profile Names can exist.
- No duplicate Profile Names can exist.
- If parameter #113 is 1, then #1 must be 0.
- If parameter #114 is 0, then #115-#117 should also be 0.
- If parameter #115 is greater than 0, then #112 should be 0.
- Default profiles always exist in the device.

Refer to the tables of parameter values in the "Copying PAD Profile Tables into a Configuration" section later in this chapter.

Accessing the PAD Profile Table Record

Follow these steps to access the PAD Profile Table record:

Step	*Action*	*Result*
1	Select **Configure**, from the CTP Main menu.	The Configure menu appears.
2	Select **PAD Profile Table** from the Configure menu.	The PAD Profile Table and its parameters appear. A prompt appears asking you to configure the next parameter.
3	Enter the parameter values.	
4	Press **<ESC>** to return to the Configure menu after you have configured all parameters.	

PAD Profile Table Record Parameters

Introduction

This section describes the PAD Profile Record parameters.

Parameters

From the PAD Profile Table Record, you can configure these parameters (with the exception of Entry Number):

Entry Number

Range:	1 to 16
Default:	1
Description:	Identifies the Pad Profile Table entry being configured by the other parameters in the record. This parameter is not configurable.

Profile Name

Range:	0 to 8 alphanumeric characters
Default:	0
Description:	Used by the parameter Profile Name in the PAD Port Record to select this particular PAD Profile Table Record entry. Use the space bar to blank the parameter value.

#1, PAD Recall

Range:	0, 1, 32 to 126
Default:	1
Description:	Identifies the character that can be entered during Data Mode to switch the terminal to Command Mode: • 0: PAD recall disable • 1: PAD recall character (DLE or <CNTRL>P) • 32 to 126: Decimal value of ASCII character used for PAD recall

#2, Echo

Range:	0, 1
Default:	1
Description:	Controls echo: • 0: Echo disabled • 1: Echo enabled Setting to 0 (disabled) causes parameter #20 Echo Mask to be ignored.

#3, Data Forwarding Character

Range:	0 to 127
Default:	2
Description:	Specifies the ASCII characters used for data forwarding: • 0: No data forwarding characters. • 1: A-Z, a-z, 0-9. • 2: <CR>. • 4: <ESC>, <BEL>, <ENQ>, <ACK>. • 8: <DEL>, <CAN>, <DC2>. • 16: <EOT>, <ETX>. • 32: <HT>, <LF>, <VT>, <FF>. • 64: All characters in columns 0 and 1 of Appendix A, ASCII Table, not mentioned above. ■ **Note** Combine several parameter values by summing: Example: 6 = 2 (<CR>) + 4 (<ESC>, <BEL>, <ENQ>, and <ACK>. This includes all of selection 2 and selection 4.

#4, Idle Timer Delay

Range:	0 to 255
Default:	0
Description:	Selects forwarding idle timer delay that determines when data is sent to the network. • 1 to 255: Value of idle timer in 1/20 seconds. • 0: disables the idle timer. ■ **Note** Functional only if parameter #15, Editing, is set to 0.

#5, Device Flow Control

Range:	0 to 2
Default:	0
Description:	Specifies if and how the PAD port sending the XON/XOFF characters restrains the attached terminal from sending data. • 0: No control with XON/XOFF. • 1: Control inbound data from device. • 2: Control inbound data and PAD commands from device. For DRI control using V.24 connector control signals (CTS), set this parameter to 0 and use parameter #105, Control Signal (EIA-232-D) Data Restraint. ■ **Note** Called Data Restraint Inbound (DRI) when using inland control.

#6, Service Signals Control

Range:	0, 1, 4, 5, 9, 12, 13
Default:	5
Description:	Controls PAD service signal messages sent to the attached device: • 0: No service signals sent. • 1: Service signals, other than the prompt, sent. • 4: Prompt service signal sent. • 5: All service signals sent. • 9: Extended format service signals, other than prompt, sent. • 12: Extended format prompt service signal sent. • 13: All service signals sent in extended format.

#7, Break Signal Operation

Range:	0, 1, 2, 4, 5, 8, 21
Default:	2
Description:	Selects the PAD mode of operation when a break signal from the attached device is received: • 0: Do nothing. • 1: Send Interrupt packet. • 2: Send Reset packet • 4: Send Indication of Break packet. • 5: Send Interrupt packet and Indication of Break packet. • 8: Escape from data transfer state; return to Command Mode. • 21: Discard output; send Interrupt packet and Indication of Break packet.

#9, Padding After Carriage Return

Range:	0 to 255
Default:	0
Description:	Controls padding after <CR>: • 0: No padding after <CR>. Use this when sending to a CRT. • 1 to 255: The number of padding characters inserted after <CR> Select at least one padding character. When the data is sent to a printer, the padding characters interrupt the data stream until the print head is ready for the next line of text.

#10, Line Folding

Range:	0 to 255
Default:	0
Description:	Controls line folding: • 0: No line folding • 1 to 255: Number of characters per line

#12, PAD Data Restraint

Range:	0, 1
Default:	1
Description:	Specifies if and how the XON/XOFF characters sent from the attached terminal restrain the PAD from sending data: • 0: No flow control with XON/XOFF • 1: Allow flow control on outbound data and service signals For DRO control using V.24 connector control signals (pin 14): • Set this parameter to 0. • Use parameter #105, Control Signal (EIA-232-D) Data Restraint. • Called Data Restraint Outbound (DRO) when using inband control.

#13, Line Feed Insertion after CR

Range:	0 to 7
Default:	4
Description:	Determines if and how a line feed character is inserted into the data during Data Mode: • 0: Line feed is not inserted. • 1: Line feed is inserted after <CR> in data sent to device. • 2: Line feed is inserted after <CR> in data from attached device. • 4: Line feed is inserted after echo of <CR> to attached device. • X: Any combination of the above, for example, to combine 1 and 2, enter 3.

#14, Padding after LF

Range:	0 to 255
Default:	0
Description:	Controls padding after <LF> in Data Mode: • 0: No padding after <LF> • 1 to 255: The number of padding characters inserted after <LF> Select at least one padding character when a printer receives data, as the padding characters interrupt the data stream until the print head is ready for the next line of text.

#15, Editing

Range:	0, 1
Default:	1
Description:	• 0: No editing • 1: Allow editing **■ Note** If set to 1, parameter #4, Idle Timer Delay must be 0. If set to 0, parameters #16 Character Delete, #17 Line Delete, and #18 Line Display are disabled.

#16, Character Delete

Range:	0 to 127
Default:	8 (backspace or <CNTRL>H)
Description:	Specifies the decimal value of the ASCII character used to delete a character when #15 Editing = 1.

#17, Line Delete

Range:	0 to 127
Default:	24 (<CNTRL>X)
Description:	Specifies the decimal value of the ASCII character used to delete a line (when #15 Editing = 1)

#18, Line Display

Range:	0 to 127
Default:	18 (<CNTRL>R)
Description:	Specifies the decimal value of the ASCII character used to display a line (when #15 Editing = 1).

#19, Editing Type

Range:	0, 1, 2, 5, 32 to 126
Default:	2
Description:	Specifies the type of character delete service signals the PAD sends: • 0: No service signals • 1: Printing terminals (PAD sends backslash (\) for each delete character received from terminal) • 2: Display terminals (PAD sends <BS><SP><BS> for each delete character received from terminal) • 8 or 32 to 126: Specifies decimal value of ASCII character used as the editing service signal

#20, Echo Mask

Range:	0 to 255
Default:	1+2+4+8+16+32+64+128
Description:	Specifies the echo mask (which characters are not echoed): • 0: No echo mask (all characters echoed). • 1: No echo of <CR>. • 2: No echo of line feed <LF>. • 4: No echo of <VT>, <HT>, or <FF>. • 8: No echo of <BEL> or <BS>. • 16: No echo of <ESC> or <ENQ>. • 32: No echo of <ACK>, <NAK>, <STX>, <SOH>, <EOT>, <ETB>, or <ETX>. • 64: No echo of editing characters as designated by parameters #16, #17, and #18. • 128: No echo of all characters in columns 0 and 1 of the ASCII table not mentioned above, and <DEL>. ■ **Note** Combine several parameter values by summing: Example: 3 = 2 (no echo of line feed) + 1 (No echo of <CR>). If parameter #2 Echo = 0 (disabled), parameter #20 Echo Mask is ignored.

#21 Parity Treatment

Range:	0 to 7
Default:	7
Description:	Specifies how parity is treated on characters to and from the attached device: • 0: No parity checking or generation • 1: Parity checked in received characters • 2: Parity generated in transmitted characters • 4: Parity stripped from received characters ■ **Note** Combine several parameter values by summing: – Example: 3 = 2 (parity generated in transmitted character) + 1 (parity checked on received characters)

#22, Page Wait

Range:	0 to 255
Default:	0
Description:	Controls page wait: • 0: Page wait disabled • 1 to 255: Number of <LF> characters sent by PAD for page wait.

#100, Break Character

Range:	0 to 127
Default:	0
Description:	Specifies the ASCII character used to simulate a break for terminals that do not have a break key: • 0: No break character defined • 1 to 127: Decimal value of ASCII character used to simulate a break

#101, Echo Substitution Toggle Character

Range:	0 to 127
Default:	0
Description:	Specifies the ASCII character used to toggle echo substitution of entered data (when #2, Echo = 1): • 0: No echo substitution • 1 to 127: Decimal value of ASCII character used to toggle echo substitution

#102, Echo Substitution Character

Range:	0 to 127
Default:	0
Description:	Specifies the decimal value of the ASCII character used to echo all characters entered by the attached device (when #2 Echo = 1 and #101 Echo Substitution Toggle Character is enabled): • 0: No echo when echo substitution toggled on • 1 to 127: Decimal value of ASCII character used as echo ■ **Note** This is useful when you enter a password and do not want the characters to appear on the screen.

#103, XON Character

Range:	0 to 255
Default:	17
Description:	Specifies the decimal value of the ASCII character used for the XON function.

#104, XOFF Character

Range:	0 to 255
Default:	19
Description:	Specifies the decimal value of the ASCII character used for the XOFF function.

#105, Control Signal (EIA-232-D) Data Restraint

Range:	0 to 3
Default:	0
Description:	Determines how V.24 control signals (instead of XOFF/XON) flow control the PAD and attached terminal. Called Out-of-Band flow control; this process applies to data, commands, and responses to and from the attached device: • 0: Disabled. • 1: Data Restraint Outbound (DRO): attached device flow controls PAD with pin 14 (requires parameter #12 PAD Data Restraint = 0). • 2: Data Restraint Inbound (DRI): PAD flow controls attached device with connector pin 5, CTS (requires parameter #5 Device Flow Control = 0). • 3: Combination of 1 and 2.

#106, Network Parity

Range:	0 to 4
Default	0
Description:	Specifies the parity of data the PAD sends to the network: • 0:Transparent. • 1: Space. • 2: Mark. • 3: Even. • 4: Odd. **■ Note** For most applications, select Transparent (0), which allows data to pass through the PAD with the least amount of processing and greatest amount of throughput.

#107, Idle Disconnect Timer

Range:	0 to 255
Default:	0
Description:	Specifies that a call is cleared if there is no user data during a specific number of minutes: • 0: Disabled. • 1 to 255: Time in minutes.

#108, Disconnect Character

Range:	0 to 127
Default:	0
Description:	Specifies the ASCII character used to disconnect a call: • 0: Disabled. • 1 to 127: Decimal value of the call disconnect character.

#109, Form Feed Padding

Range:	0 to 255
Default:	0
Description:	Specifies the number of padding characters inserted in the data sent to the attached device after a form-feed <FF>: • 0: No padding characters inserted. • 1 to 255: Number of padding characters to insert after form-feed.

#110, Esc Forwarding Delay Handling

Range:	0 to 255
Default:	0
Description:	Specifies the delay (in 1/20th second increments) after the <ESC> sequence is detected. This delay ensures that all characters involved in an ESC sequence reach an X.25 host in the same packet. • Select a value that is greater than the time it takes the terminal to send the <ESC> sequence, yet small enough so the <ESC> sequence is sent as soon as possible. • Refer to your terminal manual to determine the length of the longest sequence. • When this parameter is set, the escape sequence is sent as a single packet to allow the host to recognize it in the normal manner. ■ **Note** Entering zero (0) disables this function.

#111, Echo Control

Range:	0 to 3
Default:	0
Description:	Specifies how the PAD handles echoing of data when #2 Echo = 1: • 0: No Priority. Data is output, and characters are echoed as they arrive. • 1: Input Priority. PAD holds output until input from the terminal is finished. • 2: Output Priority. PAD echoes input after output. • 3: Formatted Screen. PAD echoes one block of data for each packet sent from the host and assumes that the packet will reformat the screen or move cursor to the next field. ■ **Note** Disabled when #2 Echo = 0

#112, Dynamic Data Forwarding

Range:	0, 1
Default:	0
Description:	Determines if the PAD dynamically forwards data packets as bandwidth becomes available on the network link: • 0: Dynamic Data Forwarding OFF • 1: Dynamic Data Forwarding ON ■ **Note** When enabled, parameters 1, 2, 3, 4, 7, 15, 16, 17, 18, 20, 100, 101, 102, 106, 108, 110, 111, and 113 are ignored.

#113, Hewlett-Packard Flow Control

Range:	0 to 4
Default:	0
Description:	Controls Hewlett-Packard Flow Control: • 0: No HP flow control • 1: HP host ENQ/ack control • 2: HP terminal ENQ/ack control • 3: HP host XON/XOFF control • 4: HP terminal XON/XOFF control

#114, PAD Mode

Range:	0 to 2
Default:	0
Description:	Selects the PAD operational mode: • 0: Normal operation • 1: Polled Async host PAD • 2: Polled Async remote PAD **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

#115, Data Forwarding Criteria

Range:	0 to 2
Default:	0
Description:	Specifies the Data Forwarding criteria: • 0: Normal • 1: Short timer • 2: Drop in RTS signal **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

#116, Short Timer Duration

Range:	0 to 255
Default:	0 (disables the Short Timer)
Description:	Specifies in milliseconds the duration of the Short Timer (when #115, Data Forwarding Criteria = 1). **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

#117, EIA Signalling Action

Range:	0, 1
Default:	0
Description:	Specifies the EIA signalling action (when #114, PAD Mode = 1 or 2). • 0: None • 1: Raise DCD before and after transmission. **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

#118, Message Assembly

Range:	0, 1
Default:	0
Description:	Allows the PAD to collect async messages from the network before sending to the attached device: • 0: Disabled • 1: Enabled **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

#119, DCD to Data Timer Duration

Range:	0 to 255
Default:	0 (disables this parameter)
Description:	Specifies the time, in milliseconds, that DCD is held high before data transmission to the attached device (when #117, EIA Signalling Action = 1). **■ Note** Entering zero (0) will disable this parameter. **■ Note** A change to this parameter only takes effect if you purchased the Transparent Polled Async option for this node.

Copying PAD Profile Tables into a Configuration

Introduction

Each node processor card contains 14 PAD Profiles stored in memory.

By using the parameter values in the stored PAD Profile Table, you can copy them into the configuration memory as if you had entered the parameter values one parameter at a time.

The PAD accepts identifiers from 0 to 99. The profiles from 0 to 12, 90, and 91 are listed in this section. All the remaining profiles (0, 14-89, and 92-99) are DEFAULT as existing now.

PAD Profile Table Size

The Size of the PAD Profile Table has increased to 100 so that Entry Number 1 under PAD Profile Table configuration corresponds to Profile Identifier 0, Entry Number 2 to Profile Identifier 1, and so on. Entry Number 100 corresponds to Profile Identifier 99.

■ Note

You cannot enter 0 as an Entry Number.

Copying a PAD Profile Table

Follow these steps to copy any of these PAD Profile Tables into your configuration:

Step	*Action*	*Result*
1	Select **Copy/Insert Record** -> **Copy Special PAD Profile from PROM** from the CTP Main menu.	This prompt appears: **From Entry Number: 1/** Select the PAD Profile Table you want to copy into your configuration.
2	Type the entry number followed by **<CR>**.	You are then prompted for the next Entry Number (or just press **<CR>**). This allows you to configure more than one entry with the same stored PAD Profile Table. The parameter values in the stored PAD Profile Table are copied into the configuration memory (as if you had entered the parameter values one parameter at a time).
3	Press **<ESC>** once you are finished.	The Copy/Insert Record menu reappears.

Parameter Values

The parameter values for the 14 PAD Profiles are listed in these tables. For example, if you enter 0, you will get all the values listed in the Default column.

Parameter Values Stored In Memory

Parameter Name	*Default (0)*	*Test (1)*	*Simple (2)*	*Transpar (3)*	*CRT (4)*	*Printer (5)*
#1 PAD Recall	1	1	1	0	1	1
#2 Echo	1	1	1	0	1	1
#3 Data Forwarding Character	2	2	126	0	2	2
#4 Idle Timer Delay	0	0	0	20	0	0
#5 Device Flow Control	0	1	1	0	0	2
#6 Service Signals Control	5	5	1	0	5	5
#7 Break Signal Operation	2	21	2	2	2	21
#8 Discard Output	n/a	n/a	n/a	n/a	n/a	n/a
#9 Padding After CR	0	0	0	0	0	5
#10 Line Folding	0	0	0	0	0	80
#11 Speed	n/a	n/a	n/a	n/a	n/a	n/a
#12 PAD Data Restraint	1	1	1	0	1	1
#13 LF Insertion After CR	4	4	0	0	4	4
#14 Padding After LF	0	0	0	0	0	5
#15 Editing	1	1	0	0	1	1
#16 Character Delete	8	8	8	8	8	8
#17 Line Delete	24	24	24	24	24	24
#18 Line Display	18	18	18	18	18	18
#19 Editing Type	2	1	1	1	2	1
#20 Echo Mask	255	0	0	0	255	255
#21 Parity Treatment	7	7	7	7	7	7
#22 Page Wait	0	0	0	0	0	0
#100 Break Character	0	0	0	0	0	0
#101 Echo Sub Toggle Character	0	0	0	0	0	0
#102 Echo Sub Character	0	0	0	0	0	0
#103 XON Character	17	17	17	17	17	17
#104 XOFF Character	19	19	19	19	19	19
#105 Data Restraint	0	0	0	0	0	0
#106 Network Parity	0	0	0	0	0	0
#107 Idle Disconnect Timer	0	0	0	0	0	0
#108 Disconnect Character	0	0	0	0	0	0
#109 Form Feed Padding	0	40	40	0	0	40
#110 ESC Forwarding Delay	0	0	0	0	0	0

Parameter Values Stored In Memory *(continued)*

Parameter Name	*Default (0)*	*Test (1)*	*Simple (2)*	*Transpar (3)*	*CRT (4)*	*Printer (5)*
#111 Echo Control	0	0	0	0	0	0
#112 Dynamic Data Forwarding	0	0	0	0	0	0
#113 Hewlett-Packard Flow Control	0	0	0	0	0	0
#114 PAD Mode	0	0	0	0	0	0
#115 Data Forwarding Criteria	0	0	0	0	0	0
#116 Short Timer Duration	0	0	0	0	0	0
#117 EIA Signalling Action	0	0	0	0	0	0
#118 Message Assembly	1	1	1	1	1	1
#119 DCD to Data Timer Duration	0	0	0	0	0	0

Parameter Values Stored in Memory

Parameter Name	*DH_ HPEA (6)*	*DT_ HPEA (7)*	*DH_ HPXON (8)*	*DT_ HPXON (9)*	*TPA_ HOST (10)*	*TPA_ RMOT (11)*
#1 PAD Recall	0	0	0	0	0	0
#2 Echo	0	0	0	0	0	0
#3 Data Forwarding Character	0	2	2	2	0	0
#4 Idle Timer Delay	0	0	0	0	1	1
#5 Device Flow Control	0	2	0	0	0	0
#6 Service Signals Control	0	0	0	0	0	0
#7 Break Signal Operation	0	0	0	0	2	2
#8 Discard Output	n/a	n/a	n/a	n/a	n/a	n/a
#9 Padding After CR	0	0	0	0	0	0
#10 Line Folding	0	0	0	0	0	0
#11 Speed	n/a	n/a	n/a	n/a	n/a	n/a
#12 PAD Data Restraint	0	1	0	0	0	0
#13 LF Insertion After CR	0	0	0	0	0	0
#14 Padding After LF	0	0	0	0	0	0
#15 Editing	0	0	0	0	0	0
#16 Character Delete	8	8	8	8	8	8
#17 Line Delete	24	24	24	24	24	24
#18 Line Display	18	18	18	18	18	18
#19 Editing Type	2	2	2	2	1	1
#20 Echo Mask	255	255	255	255	0	0

Parameter Values Stored in Memory *(continued)*

Parameter Name	*DH_ HPEA (6)*	*DT_ HPEA (7)*	*DH_ HPXON (8)*	*DT_ HPXON (9)*	*TPA_ HOST (10)*	*TPA_ RMOT (11)*
#21 Parity Treatment	7	7	7	7	7	7
#22 Page Wait	0	0	0	0	0	0
#100 Break Character	0	0	0	0	0	0
#101 Echo Sub Toggle Character	0	0	0	0	0	0
#102 Echo Sub Character	0	0	0	0	0	0
#103 XON Character	17	17	17	17	17	17
#104 XOFF Character	19	19	19	19	19	19
#105 Data Restraint	0	0	0	0	0	0
#106 Network Parity	0	0	0	0	0	0
#107 Idle Disconnect Timer	0	0	0	0	0	0
#108 Disconnect Character	0	0	0	0	0	0
#109 Form Feed Padding	0	0	0	0	0	0
#110 ESC Forwarding Delay	0	0	0	0	0	0
#111 Echo Control	0	0	0	0	0	0
#112 Dynamic Data Forwarding	0	0	0	0	0	0
#113 Hewlett-Packard Flow Control	1	2	3	4	0	0
#114 PAD Mode	0	0	0	0	1	2
#115 Data Forwarding Criteria	0	0	0	0	0	0
#116 Short Timer Duration	0	0	0	0	10	10
#117 EIA Signalling Action	0	0	0	0	1	0
#118 Message Assembly	1	1	1	1	1	1
#119 DCD to Data Timer Duration	0	0	0	0	0	0

Values for Profiles 90 and 91

The parameter values for the International Simple (INT1984) and International Transparent (TRANSP1) profiles 90 and 91 are listed in this table.

Parameter Values Stored in Memory

	Parameter	*INT1984 (90)*	*IRANSP1 (91)*
1	Pad recall using a character	1	0
2	Echo	1	0
3	Data forwarding character	126	0
4	Idle timer delay	0	20
5	Ancillary device control	1	0
6	Control of PAD service signals	1	0
7	Break operating mode	2	2
8	Discard output	0	0
9	CR padding	0	0
10	Line folding	0	0
11	Baud rate	14	14
12	Flow control of the PAD	1	0
13	Linefeed insertion after CR	0	0
14	Padding after linefeed	0	0
15	Editing	0	0
16	Character delete	127	127
17	Line delete	24	24
18	Line display	18	18
19	Editing PAD service signal	1	1
20	Echo mask	0	0
21	Parity treatment	0	0
22	Page wait	0	0

■ **Note**
The values for all remaining parameters are zero.

PAD Bulletin Message

The PAD Bulletin Message is displayed when you connect to a PAD, and the Profile Parameter 6 (service signals control) is set to 5.

Remote PAD Parameter Table Record

Introduction

This record contains parameters that define a specified remote PAD. When a call is made to a port that uses this table entry, an X.29 set command is sent.

What You See In This Record

Figure 8 shows how the Remote PAD Parameter Table Record and its configuration parameters fit into the PathBuilder S200 series switch menu hierarchy.

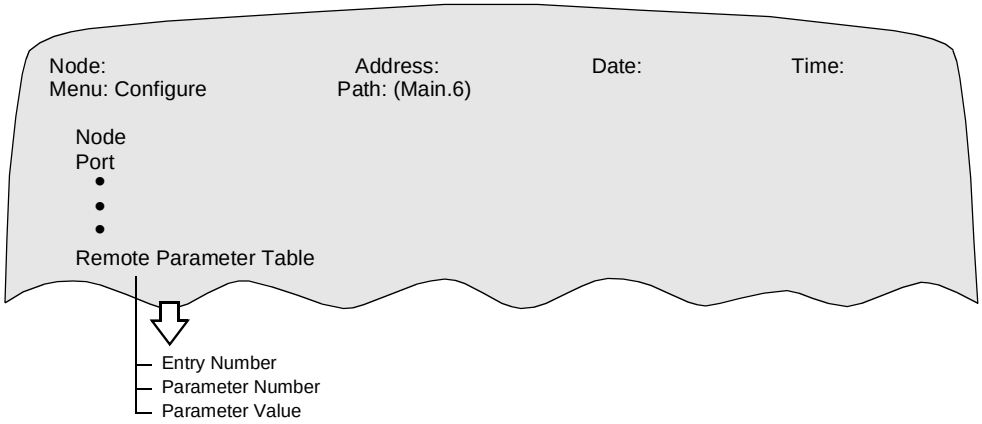

Figure 8. Remote PAD Parameter Table Record

Before You Begin

Before you can configure parameters, you must log on to the local node's control terminal port. Refer to the *Configuration Basics Guide* for CTP procedures.

Configuration Guidelines

When you configure the Remote PAD Parameter Table Record, do not use duplicate Parameter Numbers.

Accessing the Remote PAD Parameter Table Record

Follow these steps to access the Remote PAD Parameter Table record:

Step	*Action*	*Result*
1	Select **Configure** from the CTP Main menu.	The Configure menu appears.
2	Select **Remote PAD Parameter Table** from the Configure menu.	The Remote PAD Parameter Table and its parameters appear. A prompt appears asking you to configure the next parameter.
3	Enter the parameter values.	
4	Press **<ESC>** to return to the Configure menu after you have configured all parameters.	

Remote PAD Parameter Table Record Parameters

Introduction

This section describes the Remote PAD Parameter Record parameters.

Parameters

You can configure these parameters (with the exception of Entry Number) from the Remote PAD Parameter Table Record:

Entry Number

Range:	1 to 6
Default:	1
Description:	Identifies the PAD Parameter Table entry being configured by the other parameters in the record. ■ **Note** Not configurable. Parameter Remote PAD Parameter Number in the PAD Port Record references this value.

#1 Parameter Number

Range:	0 to 127
Default:	0
Description:	Specifies the X.3 parameter sent to a remote PAD that has just connected to a local PAD port. The selections correspond to the parameters in the PAD Profile Table: • #1: PAD Recall character (0, 1,32 to 126) • #2: Echo (0, 1) • #3: Data Forwarding Character (0, 1 to 127) • #4: Idle Timer Delay (0, 1 to 255) • #5: Device Flow Control (0, 1, 2) • #6: Service Signals Control (0, 1, 4, 7 to 15) • #7: Break Signal Operation (0, 1, 4, 8, 16) • #8: Discard output (0, 1) (not supported by the 6500*PLUS*) • #9: Padding after Carriage Return (0 to 255) • #10: Line Folding (0, 1 to 255) • #11: Speed (0-18) (not supported by the 6500*PLUS*) • #12: PAD Data Restraint (0,1) • #13: Line Feed Insertion after CR (0, 1, 2, 4) • #14: Padding after LF (0 to 255) • #15: Editing (0, 1) • #16: Character Delete (0 to 127) • #17: Line Delete (0 to 127) • #18: Line Display (0 to 127) • #19: Editing Type (0, 1, 2, 8, 32 to 126) • #20: Echo Mask (0 to 255) • #21: Parity Treatment (0 to 7) (normally not used) • #22: Page Wait (0, 1 to 255) • #100: Break Character (0 to 127) • #101: Echo Substitution Toggle Character (0 to 127) • #102: Echo Substitution Character (0 to 127) • #103: XON Character (0 to 255) • #104: XOFF Character (0 to 255) • #105: Control Signal (EIA-232-D) Data Restraint (0 to 3) • #106: Network Parity (0 to 4) • #107: Idle Disconnect Timer (0 to 255)

#1 Parameter Number *(continued)*

	• #108: Disconnect Character (0 to 127) • #109: Form Feed Padding (0 to 255) • #110: Esc Forwarding Delay Handling (0 to 255) • #111: Echo Control (0 to 3) • #112: Dynamic Data Forwarding (0, 1) • #113: Hewlett-Packard flow control (0 to 4) • #114: PAD Mode (0 to 2) • #115: Data Forwarding Criteria (0 to 2) • #116: Short Timer Duration (0 to 255) • #117: EIA Signalling Action (0, 1) • #118: Message Assembly (0, 1) • #119: DCD to Data Timer Duration (0 to 255) **■ Note** If you enter 0 (zero), the entry is ignored.

#1 Parameter Value

Range:	0 to 255
Default:	0
Description:	Specifies the X.3 parameter value (in the PAD Profile Table) sent to the remote PAD when connection is made. Entering an incorrect value for a particular parameter causes the value to be ignored. **Example:** Step 1: Set the Parameter Value (or press **<CR>**). Result: The next Parameter Number appears, followed by the next Parameter Value. Step 2: Set a parameter value for #1 Parameter Number and #1 Parameter Value. Result: #2 Parameter Number and then #2 Parameter Value appear. The sequence repeats until you enter one of these occur: • A Parameter Number and Parameter Value for each parameter listed in the PAD profile table • **<;>** to implement the values **<ESC>** to abort the process

Detailed PAD Port Statistics

Function

When you select Detailed PAD Port Statistics, a series of screens appears that provides information about the state and status of a PAD port.

What You See in the First Screen

Figure 9 shows the first screen of the Detailed PAD Port Statistics.

```
Node:                          Address:              Date:              Time:
 Detailed PAD Statistics: Port 3                                         Page:  1 of 3

 Port Number: 3                Port Type:  ASYNC PAD                Port Status: Up
Port Speed:  9600                                                    Port State: X28
Port Utilization In: 0%                                              Port Utilization Out: 0%

 Physical:
  Parity Errors:  0            Overrun Errors: 0     Framing Errors: 0

 Data Summary:
                          IN        OUT                              IN       OUT
Characters:               0         0          Characters/sec:       0        0
Packets:                  0         0          Packets/sec:          0        0
  Number of Packets Queued: 0

EIA Summary:                                     INPUT                OUTPUT
                                          DTR  RTS MB  P14    DSR  DCD  RI   CTS
 State: Connected (SIMPLE)                 L    L   L    L      H    H    L    H



Press any key to continue (ESC to exit)...
```

Figure 9. Example of Detailed PAD Port Statistics, First Screen

Description of Terms — First Screen

The first Detailed PAD Port Statistics screen contains this information:

Screen Term	*Tells You...*
Port Number	Number of the port
Port Type	Type of port: ASYNC PAD
Port Status	Status of the port: Up
Port Speed	The configured port speed
Port State	These are the possible states: • X.28: The port is in Command mode • PAD: The port is in Data mode
Port Utilization: IN/OUT	Percentage of port bandwidth being used
Physical	Number of Parity, Overrun, and Framing errors since the last reset

Screen Term	***Tells You...*** *(continued)*
Data Summary: IN/OUT	Summary of the characters, packets, and frames being sent and received over the port
EIA Summary	Summary of the EIA control signals being sent and received over the port Possible states are: • NULL • Connected (SIMPLE) • Idle, Connected (DTR), Wait For Clear (DTR), Wait for DTR (DTR) • Idle (DTRP), Call Detected (DTRP), Connected (DTRP) • Idle, Call Detected (DIMO), Incoming Call Detected (DIMO), Connected (DIMO), Clear Confirm (DIMO) • Idle, RI On (EMRI), RI Off (EMRI), Wait for RTS (EMRI), Connected (EMRI), Wait for DTR (EMRI)

What You See in the Second Screen

Figure 10 shows the second screen of the Detailed PAD Port Statistics.

```
Node:                    Address:          Date:          Time:
 Detailed PAD Statistics: Port 3                          Page:  2 of 3

 Call Summary:
  Current Status: Disconnected
  Time until next auto-call attempt: 0 secs
  Number of auto-call attempts: 0
  Last clear cause code: 0 (Cleared by other end)
  Last clear diagnostic code: 0 (No more information)

  Last Inbound Call:
    Called Address:
    Calling Address:
    Facilities:
    CUD:

  Last Outbound Call:
    Called Address:
    Calling Address:
    Facilities:
    CUD:

 Press any key to continue (ESC to exit)...
```

Figure 10. Example of Detailed PAD Port Statistics, Second Screen

Description of Terms — Second Screen

The second Detailed PAD Port Statistics screen contains this information:

Screen Term	*Tells You...*
Call Summary	• Current Status: Status of the call on the specific port (Disconnect, Calling, Called, Clearing, Connected, Local Copy) • Time Until Next Autocall Attempt: Number of seconds until the next autocall is attempted • Number of Autocall attempts: Number of autocalls that will be attempted • Last Clear Cause Code: Last clear cause code received by the port • Last Clear Diagnostic Code: Last clear diagnostic code received by the port
Last Inbound Call	Called Address, Calling Address, Facilities, and CUD of the last inbound call
Last Outbound Call	Called Address, Calling Address, Facilities, and CUD of the last outbound call

What You See in the Third Screen

Figure 11 shows the third screen of the Detailed PAD Port Statistics.

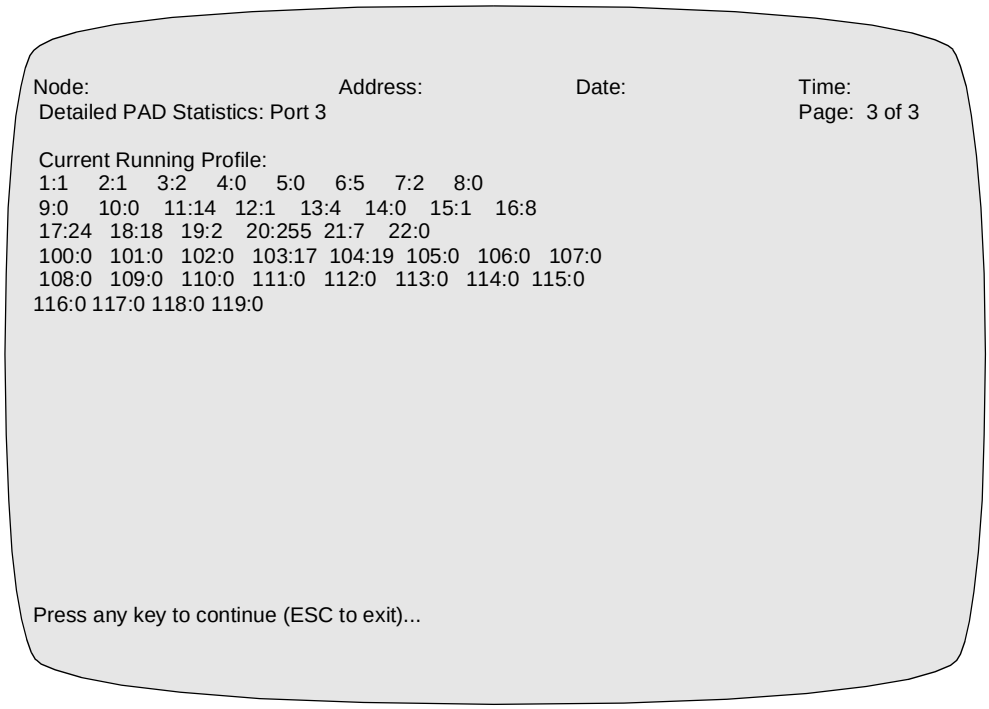

Figure 11. Example of Detailed PAD Port Statistics, Third Screen

The third Detailed PAD Statistics screen lists the Current Running Profile information.

ATPAD Ports

Introduction

This section contains detailed descriptions of ATPAD ports, how they operate, and how to configure them.

ATPAD Operation

ATPAD

An ATPAD port operates in either a Command Mode or Data Mode. This port type is always in the Command mode whenever a call is not taking place.

When the ATPAD is in the Command mode, it receives characters from the attached terminal device, processes them using the ATPAD command processor, and sends a response (or result code) to the terminal. It does not forward the command to the network.

The ATPAD is in data mode when there is an X.25 network call in place to a remote device. In data mode, it receives characters from the terminal device, packetizes them, and forwards them through the network to the remote device.

Data Forwarding Criteria

You can select the format for printing with the port parameter “Result Codes”. The options are:

- ALPHA—Result codes are printed in all capitals. They are printed on a new line and the cursor is advanced to the next new line. (<CR><LF> Result Code <CR><LF>).
- NUM—The numerical equivalent result code is printed followed by a <CR>.
- NONE—No result codes are displayed.

Criteria Descriptions

This table describes three criteria used to packetize and forward data to the network.

If you want to...	*Then use...*
Forward data on full packets...	Forward on full packet. The ATPAD always forwards on full packets. You can configure the maximum packet size as 128, 256, 512, or 1024 bytes. You can select one of the other two criteria so that the ATPAD forwards data before a full packet has been assembled.
Packetize and forward the characters received since the last time expiration....	Forward on Data Forwarding Character. You can use the Data Forwarding Timer in interactive sessions where the host (Echoplex) echoes the characters typed by the terminal equipment. If you want the characters to be echoed as quickly as possible, set the Data Forwarding Timer to a low value. If you set the Data Forwarding Timer to a zero value, you disable this function.
Send records or command to the host and they are always terminated by the same character, for example; <CR>...	Forward on Data Forward Character

Flow Control

You can configure the ATPAD for either type of flow control:

- Control Signal
- XON/XOFF

If you select Control Signal, the port does not send data if the port's Pin 14 input is LOW. If the port wants to flow control the attached device, it sets its CTS output LOW.

If you configure the port for XON/XOFF, the port stops sending data if it receives the configured XOFF character. It resumes transmission when it receives an XON character. You can configure the XOFF and XON characters. If the port wants to flow control the attached device, it sends an XOFF character. Then it sends an XON character when it is ready to receive more data.

Caution!

If the port's message queue overruns because flow control is not in effect, the port discards data and this alarm is generated:

Pn - DATA DISCARDED

where: Pn - is the port identifier, and n is the port number.

Protocol Identifier

You can use a Protocol Identifier to ensure that only calls from other devices using the same Protocol Identifier are accepted.

You configure a Protocol ID in the port record. The PID is inserted in the Call User Data field of all Call Request packets generated by the port. All incoming Call requests are checked for the presence of the same PID. If it is not present in the Call Request packet, the call is rejected.

If you leave the Protocol ID parameter blank, no PID is inserted in Call Requests, and there is no checking of incoming Call Request PIDs.

CUD and Facilities

Call User Data (CUD) and facilities in incoming Call Request packets are ignored except for the PID. If you need to insert CUD and Facility fields in Call Request packets generated by the port, do this:

Step	*Action*
1	Configure one of the Stored Addresses using the X.28 Call Command format.
2	Insert the appropriate CUD and Facilities fields in the configured Call Command string.
3	Use the ATDSn command referencing the correct Stored Address.

Network Parity Application

The application that the network parity feature has been designed for is as follows. An async device is directly connected to the ATPAD, and a call is made to an X.25 host. The ATPAD port currently strips parity on the incoming async data, so that the data on the X.25 link is always 8 bits, no parity. Normally, the PAD at the remote site would regenerate parity when it transmits the data. In this application, the connection is to an X.25 host, which is expecting the data to be 7 bits, even parity.

This enhancement allows for selection of the parity requirements for data transmission. This configuration is shown in Figure 12.

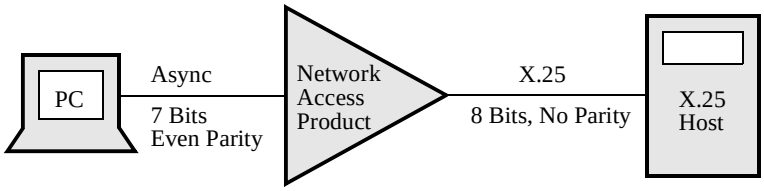

Figure 12. ATPAD Application Environment

Response Delay

If it is necessary to slow down the responses sent by an ATPAD port, you can configure Response Time using this CSK: **BSYJWMYCCCKK6HE9NKEE**. This CSK causes all ATPAD ports on the node to delay sending responses to commands for a period of 1 second.

This feature is designed for this situation. If an automated device that you are using to send commands to an ATPAD port has trouble recognizing the responses when they arrive too quickly, this feature will delay responses. This feature is not recommended when the commands are being issued by a human operator.

■ **Note**

The ATPAD does not have type-ahead capability, so commands that are sent before the response to the previous command has been received are ignored.

DTR Timeout

The standard timeout period for DTR Connection Type is 1.5 seconds. This means that DTR is not recognized as being in the OFF state until it has been OFF for a continuous period of 1.5 seconds. If you need a shorter timeout period, you can configure it using this CSK: **DTZEFG4JHTQY2HCFBJ66**.

This CSK will change the timeout period for all ports on the node with DTR Connection Type to 100 ms. To guarantee reliable operation in this mode, a minimum OFF time of 150 ms for DTR is recommended.

Configuration

Guidelines

Use these guidelines when you enter ATPAD commands:

- Type the commands in upper, lower, or mixed case. If echo is enabled, the commands are echoed in all capitals.
- Use white space (TAB and SPACE) characters anywhere on the command line. The command processor ignores them.
- Edit the buffer using the configurable Back Space Character.
- Be sure that you do not exceed the buffer's maximum length. Otherwise, you get the result code **ERROR**.
- Type **AT<CR>** to clear the command buffer.
- Be aware that you can:
  - Enter commands that are not supported by the ATPAD. You get the result code OK, but the ATPAD does not act on the unsupported commands.
  - Enter multiple commands on a single command line. However, the ATPAD recognizes only the first supported command.

Configuring The ATPAD

You can configure the ATPAD port using the CTP by selecting the Port item under the Configure menu. You can perform these standard Port Control functions using the CTP:

- Port Boot
- Port Enable
- Port Disable
- Port Busy-out

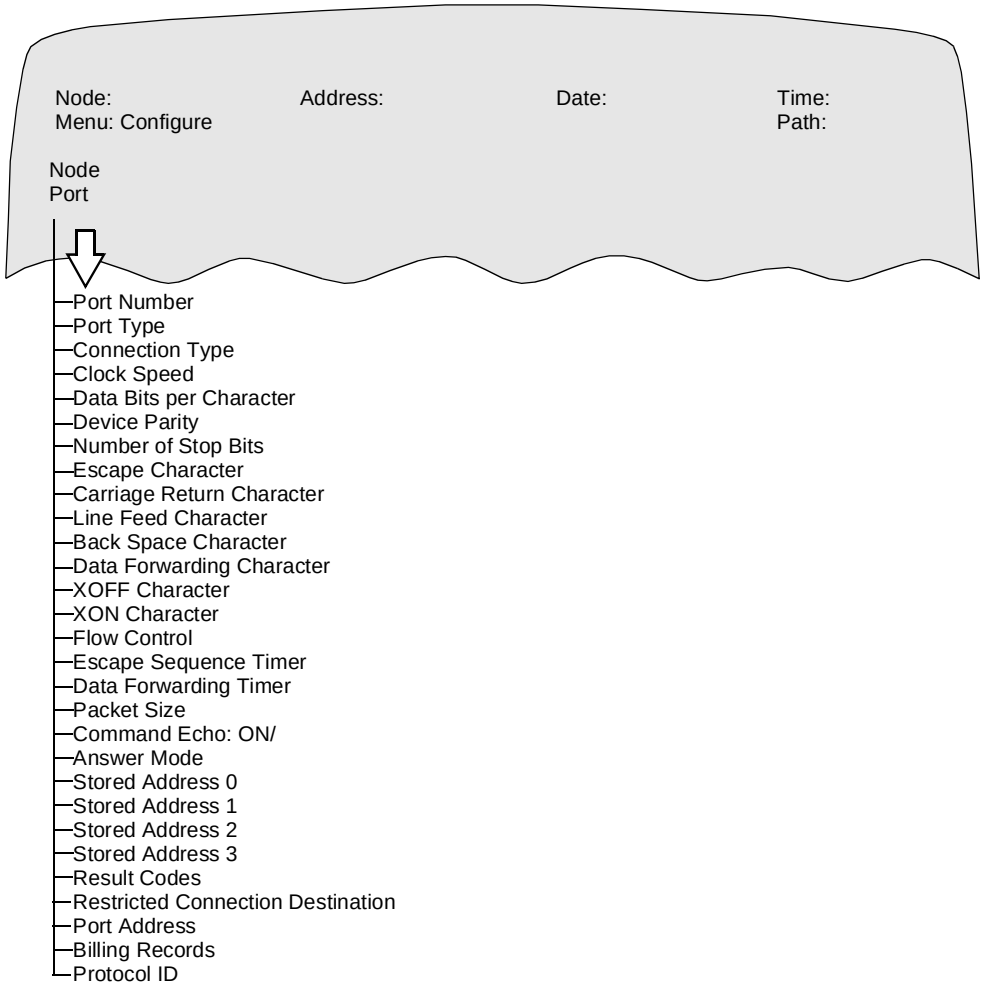

Figure 13. Configure ATPAD Port Menu

Parameters

These tables describe the parameters used to configure the ATPAD port.

■ Note

Unless otherwise indicated, a Node Boot must be performed to have changes take affect.

Port Type

Range:	NULL, PAD, X25, SDLC, FRI, ATPAD, PPP
Default:	PAD
Description:	Specifies the port type. • NULL: NULL type port • PAD: PAD type port • X25: X25 type port • SDLC: SDLC hpad/tpad • FRI: Frame Relay Interface port • ATPAD: ATPAD type port • PPP: PPP type port

Connection Type

Range:	SIMP, DTR
Default:	SIMP
Description:	Specifies the control signal handshaking required for a connection to be made to this port. • SIMP: Simple, no control signals required • DTR: Dedicated, require the data terminal ready signal (DTR)

Clock Speed

Range:	50, 75, 100, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 75/1200
Default:	9600
Description:	Speed of the port in bits per second, when using internal clocking. **■ Note** The maximum port speed is dependent on the type of hardware installed.

Data Bits

Range:	7 to 8
Default:	8
Description:	Number of bits per character when transmitting and receiving data.
Boot Type:	A Port boot is required for the change to take effect.

Parity

Range:	NONE, SPAC, MARK, EVEN, ODD
Default:	NONE
Description:	The parity the port uses when transmitting and receiving data • NONE: No parity • SPAC: Space Parity • MARK: Mark Parity • EVEN: Even Parity • ODD: Odd Parity
Boot Type:	A Port boot is required for the change to take effect.

Stop Bits

Range:	1, 1.5, 2
Default:	1
Description:	The number of stop bits generated by the port when transmitting. This parameter has no effect on data received by the port. • 1 Stop Bit • 1.5: 1.5 Stop Bits • 2: 2 Stop Bits
Boot Type:	A Port boot is required for the change to take effect.

Escape Character

Range:	0 to 255
Default:	43
Description:	Specifies the character used to escape the Command Mode.
Boot Type:	A Port boot is required for the change to take effect.

Carriage Return Character

Range:	0 to 255
Default:	13
Description:	Specifies the character used to insert a carriage return.
Boot Type:	A Port boot is required for the change to take effect.

Line Feed Character

Range:	0 to 255
Default:	10
Description:	Used to move the cursor to a new line.
Boot Type:	A Port boot is required for the change to take effect.

Back Space Character

Range:	0 to 255
Default:	8
Description:	Used for character editing.
Boot Type:	A Port boot is required for the change to take effect.

Data Forwarding Character

Range:	0 to 255
Default:	13
Description:	Packets will be forwarded to the network when this character is received. A value of 0 for this parameter will disable the function.
Boot Type:	A Port boot is required for the change to take effect.

XOFF Character

Range:	0 to 255
Default:	19
Description:	Specifies the value of the ASCII character used for the XOFF function.
Boot Type:	A Port boot is required for the change to take effect.

XON Character

Range:	0 to 255
Default:	17
Description:	Specifies the value of the ASCII character used for the XON function.
Boot Type:	A Port boot is required for the change to take effect.

Flow Control

Range:	NONE, CNTL, XOFF
Default:	NONE
Description:	Specifies the type of flow control that the port uses: • NONE: No flow control • CNTL: Control signal flow control • XOFF: XON/XOFF flow control
Boot Type:	A Port boot is required for the change to take effect.

Escape Sequence Timer

Range:	1 to 51
Default:	10
Description:	Value of the escape time in 100- millisecond increments. A value of 10 corresponds to 1 second.
Boot Type:	A Port boot is required for the change to take effect.

Data Forwarding Timer

Range:	0 to 255
Default:	0
Description:	Selects the forwarding idle timer that determines when data is packetized and sent to the network. • 0: time disabled • 1 to 255: value of idle time in 1/20 seconds
Boot Type:	A Port boot is required for the change to take effect.

Packet Size

Range:	128, 256, 512, 1024
Default:	128
Description:	Maximum size of packets that the ATPAD forms.
Boot Type:	A Port boot is required for the change to take effect.

Echo

Range:	ON, OFF
Default:	ON
Description:	Specifies whether Echo is enabled or disabled when the port is in the Command Mode.
Boot Type:	A Port boot is required for the change to take effect.

Answer Mode

Range:	AUTO, MAN, NONE
Default:	AUTO
Description:	Determines whether incoming calls are answered automatically or manually (using the ATA command). Selecting NONE bars incoming calls.
Boot Type:	A Port boot is required for the change to take effect.

Stored Addresses

Range:	4 sets of 0 to 64 alphanumeric characters
Default:	(blank)
Description:	Used to make calls with the ATDSn command. The addresses may be in mnemonic form (if preceded by a DOT) or in the form of an X.28 call command. ■ **Note** Pressing the space bar blanks out this field.
Boot Type:	A Port boot is required for the change to take effect.

Result Codes

Range:	ALPHA, NUM, NONE
Default:	ALPHA
Description:	Specifies how result codes are displayed: • ALPHA: spells out the result code • NUM: displays a numeric equivalent for the result code • NONE: suppresses result code generation.
Boot Type:	A Port boot is required for the change to take effect.

Restricted Connection Destination:

Range:	0 to 32 characters
Default:	(blank)
Description:	All calls entering this port are routed to the destination specified in this parameter regardless of route selection table entries. ■ **Note** Pressing the space bar blanks out this field.
Boot Type:	A Port boot is required for the change to take effect.

Port Address

Range:	0 to 15 BCD digits
Default:	(blank)
Description:	Inserted into the calling address field of call requests. ■ **Note** Pressing the space bar blanks out this field.
Boot Type:	A Port boot is required for the change to take effect.

Billing Records

Range:	OFF, ON
Default:	OFF
Description:	Controls whether billing records are created for calls on this port.
Boot Type:	A Port boot is required for the change to take effect.

Protocol ID

Range:	0 to 8 hex digits
Default:	(blank)
Description:	First four bytes of the call user data. If set to zero, PID checking is not performed.
Boot Type:	A Port boot is required for the change to take effect.

Network Parity

Range:	NONE, SPAC, MARK, EVEN
Default:	NONE
Description:	Specifies the parity of the data sent to the network by the ATPAD. • NONE: No parity. Pass the data as received • SPAC: Space parity • MARK: Mark parity • EVEN: Even parity • ODD: Odd parity
Boot Type:	A Port boot is required for the change to take effect.

ATPAD Port Statistics

Function

When you select Detailed ATPAD Port Statistics, a series of screens appears that provides information about the state and status of the ATPAD port.

What You See in the First Screen

Figure 14 illustrates the first screen of Detailed ATPAD Port Statistics.

```
Node:                          Address:          Date:          Time:
Detailed ATPAD Port Statistics: Port 3                          Page:  1 of  2

Port Number: 3                 Port Type:  ATPAD Port          Status: Up
Port Speed:  9600                                              Port State: Data
Port Utilization In: 0%                                        Port Utilization Out: 1%

Physical Summary:
 Parity Errors:  0             Overrun Errors: 0               Framing Errors: 0

Data Summary:
                    IN          OUT                            IN          OUT
 Characters:        252         3807       Characters/sec:     0           18
 Packets:           252         274         Packets/sec:       0           0
 Number of Packets Queued: 0

Interface Summary:  EIA-232-D  DCE          INPUT                OUTPUT
                                DTR  RTS   MB   P14          DSR   DCD   RI   CTS
 State: Connected (SIMPLE)      H    H     H    L            L     H     H    L


Press any key to continue (ESC to exit)...
```

Figure 14. ATPAD Port Statistics - Screen 1

Description of Terms — First Screen

The first Detailed ATPAD Port Statistics screen contains this information:

Screen Term	*Tells You...*
Port Number	Number of the port
Port Type	Type of port: ATPAD
Port Status	Status of the port: Up
Port Speed	The configured port speed
Port State	These are the possible states: • ATPAD: The port is in Command mode • PAD: The port is in Data mode
Port Utilization: IN/OUT	Percentage of port bandwidth being used
Physical Summary	Number of Parity, Overrun, and Framing errors since the last reset

Screen Term	***Tells You...*** *(continued)*
Data Summary: IN/OUT	Summary of the characters, packets, and frames being sent and received over the port
Interface Summary	Summary of the EIA control signals being sent and received over the port Possible states are: • NULL • Connected (SIMPLE) • Idle, Connected (DTR), Wait For Clear (DTR), Wait for DTR (DTR) • Idle (DTRP), Call Detected (DTRP), Connected (DTRP) • Idle, Call Detected (DIMO), Incoming Call Detected (DIMO), Connected (DIMO), Clear Confirm (DIMO) • Idle, RI On (EMRI), RI Off (EMRI), Wait for RTS (EMRI), Connected (EMRI), Wait for DTR (EMRI)

What You See in the Second Screen

Figure 15 illustrates the second screen of Detailed ATPAD Port Statistics.

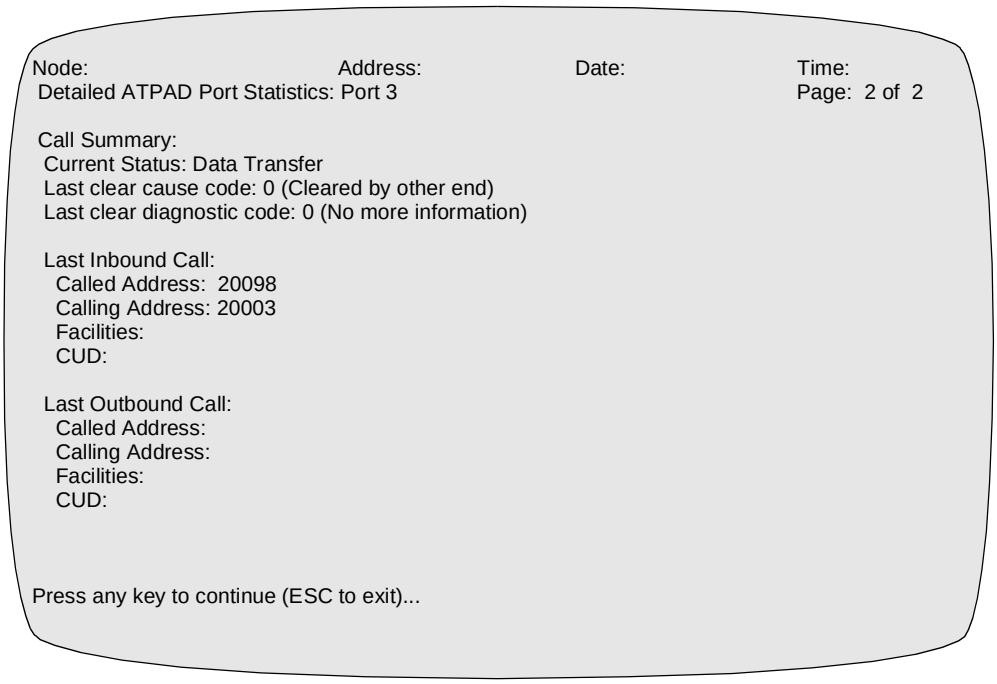

Figure 15. ATPAD Port Statistics - Screen 2

Description of Terms — Second Screen

The second Detailed PAD Port Statistics screen contains this information:

Screen Term	*Tells You...*
Call Summary	• Current Status: Status of the call on the specific port (Data Transfer, Calling, Called, Clearing, Connected, Local Copy) • Last Clear Cause Code: Last clear cause code received by the port • Last Clear Diagnostic Code: Last clear diagnostic code received by the port
Last Inbound Call	Called Address, Calling Address, Facilities, and CUD of the last inbound call
Last Outbound Call	Called Address, Calling Address, Facilities, and CUD of the last outbound call

Appendix A
Technical Support

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Information contained in this appendix is correct at time of publication. For the very latest, 3Com recommends that you access the 3Com Corporation World Wide Web site.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com FTP site
- 3Com Bulletin Board Service (3Com BBS)
- 3ComFacts℠ automated fax service

World Wide Web Site

Access the latest networking information on the 3Com Corporation World Wide Web site by entering the URL into your Internet browser:

http://www.3com.com/

This service provides access to online support information such as technical documentation and software library, as well as support options ranging from technical education to maintenance and professional services.

3Com FTP Site

Download drivers, patches, and software, across the Internet from the 3Com public FTP site. This service is available 24 hours a day, 7 days a week.

To connect to the 3Com FTP site, enter the following information into your FTP client:

- Hostname: **ftp.3com.com (or 192.156.136.12)**
- Username: **anonymous**
- Password: **<your Internet e-mail address>**

Note

A user name and password are not needed with Web browser software such as Netscape Navigator and Internet Explorer.

3Com Bulletin Board Service

The 3Com BBS contains patches, software, and drivers for 3Com products. This service is available through analog modem or digital modem (ISDN) 24 hours a day, 7 days a week.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	*Data Rate*	*Telephone Number*
Australia	Up to 14,400 bps	61 2 9955 2073
Brazil	Up to 14,400 bps	55 11 5181 9666
France	Up to 14,400 bps	33 1 6986 6954
Germany	Up to 28,800 bps	4989 62732 188
Hong Kong	Up to 14,400 bps	852 2537 5601
Italy	Up to 14,400 bps	39 2 27300680
Japan	Up to 14,400 bps	81 3 3345 7266
Mexico	Up to 28,800 bps	52 5 520 7835
P.R. of China	Up to 14,400 bps	86 10 684 92351
Taiwan, R.O.C.	Up to 14,400 bps	886 2 377 5840
U.K.	Up to 28,800 bps	44 1442 438278
U.S.A.	Up to 28,800 bps	1 408 980 8204

Access by Digital Modem

ISDN users can dial in to the 3Com BBS using a digital modem for fast access up to 56 Kbps. To access the 3Com BBS using ISDN, use the following number:

1 408 654 2703

3ComFacts Automated Fax Service

The 3ComFacts automated fax service provides technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3ComFacts using your Touch-Tone telephone:

1 408 727 7021

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. To find out more about your support options, please call the 3Com technical telephone support phone number at the location nearest you.

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Below is a list of worldwide technical telephone support numbers:

Country	*Telephone Number*	*Country*	*Telephone Number*
Asia Pacific Rim			
Australia	1 800 678 515	P.R. of China	10800 61 00137 or
Hong Kong	800 933 486		021 6350 1590
India	61 2 9937 5085	Singapore	800 6161 463
Indonesia	001 800 61 009	S. Korea	
Japan	0031 61 6439	From anywhere in S. Korea:	82 2 3455 6455
Malaysia	1800 801 777	From Seoul:	00798 611 2230
New Zealand	0800 446 398	Taiwan, R.O.C.	0080 611 261
Pakistan	61 2 9937 5085	Thailand	001 800 611 2000
Philippines	1235 61 266 2602		
Europe			
From anywhere in Europe, call:	+31 (0)30 6029900 phone +31 (0)30 6029999 fax		
From the following European countries, you may use the toll-free numbers:			
Austria	06 607468	Netherlands	0800 0227788
Belgium	0800 71429	Norway	800 11376
Denmark	800 17309	Poland	0800 3111206
Finland	0800 113153	Portugal	05 05313416
France	0800 917959	South Africa	0800 995014
Germany	0130 821502	Spain	900 983125
Hungary	00800 12813	Sweden	020 795482
Ireland	1 800 553117	Switzerland	0800 55 3072
Israel	177 3103794	U.K.	0800 966197
Italy	1678 79489		
Latin America			
Argentina	541 312 3266	Colombia	571 629 4847
Brazil	55 11 523 2725, ext. 422	Mexico	01 800 849 2273
North America	1 800 NET 3Com (1 800 638 3266)		

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	*Telephone Number*	*Fax Number*
Asia, Pacific Rim	65 543 6342	65 543 6348
Europe, South Africa, and Middle East	011 44 1442 435860	011 44 1442 435718
From the following European countries, you may call the toll-free numbers; select option 2 and then option 2:		
Austria	06 607468	
Belgium	0800 71429	
Denmark	800 17309	
Finland	0800 113153	
France	0800 917959	
Germany	0130 821502	
Hungary	00800 12813	
Ireland	1800553117	
Israel	177 3103794	
Italy	1678 79489	
Netherlands	0800 0227788	
Norway	800 11376	
Poland	00800 3111206	
Portugal	05 05313416	
South Africa	0800 995014	
Spain	900 983125	
Sweden	020 795482	
Switzerland	0800 55 3072	
U.K.	0800 966197	
Latin America	1 408 326 2927	1 408 764 6883
U.S.A. and Canada	1 800 876 3266, option 2	1 408 764 7120

3/26/98

Index

Symbols

#1, PAD Recall 29
#10, Line Folding 32
#100, Break Character 37
#101, Echo Substitution Toggle Character 37
#102, Echo Substitution Character 37
#103, XON Character 38
#104, XOFF Character 38
#105, Control Signal (EIA-232-D) Data Restraint 38
#106, Network Parity 39
#107, Idle Disconnect Timer 39
#108, Disconnect Character 39
#109, Form Feed Padding 40
#110, Esc Forwarding Delay Handling 40
#111, Echo Control 41
#112, Dynamic Data Forwarding 41
#113, Hewlett-Packard Flow Control 41
#114, PAD Mode 42
#115, Data Forwarding Criteria 42
#116, Short Timer Duration 42
#117, EIA Signalling Action 43
#118, Message Assembly 43
#119, DCD to Data Timer Duration 43
#12, PAD Data Restraint 33
#13, Line Feed Insertion After CR 33
#14, Padding after LF 34
#15, Editing 34
#16, Character Delete 34
#17, Line Delete 34
#18, Line Display 35
#19, Editing Type 35
#2, Echo 30
#20, Echo Mask 36
#21, Parity Treatment 36
#22, Page Wait 37
#3, Data Forwarding Character 30
#4, Idle Timer Delay 30
#5, Device Flow Control 31
#6, Service Signals Control 31
#7, Break Signal Operation 32
#9, Padding After Carriage Return 32

Numerics

3Com bulletin board service (3Com BBS) 2
3Com URL 1
3ComFacts 2

A

APAD
  enabling the CSK 24
  XON/XOFF transmission
    using X.25 interrupt packets 23
ATPAD
  DTR timeout 60
  response delay 60
Auto Baud Sequence 9
Autobaud sequence 22
Autocall Mnemonic
  inputting a value 5
  specifying 5
Autocall Timeout
  guidelines 5
Autocall Timeout (sec) 13
Autocalling
  attempts 14
  SDLC 21
Autospeed 9, 22
  implementing 22

B

Billing Printer Mnemonic
  specifying 5
Billing Records
  guidelines 5
Break Character 37
Break Signal Operation 32
bulletin board service 2

C

Call Accept Timeout 15
Call Control 11
  setting 5
Call User Data (CUD) 59
Calling
  initiating 20
  SDLC 21
Character Delete 34
Clear packet 15
Configuration
  PAD prompt table 25
  Remote PAD Parameter Table 49
Connection Type
  DTRP 7
  PAD Port 7
  SIMP 5

Control Terminal Port 1
CUG 14
    membership 14
    setting for Terminal Control 5

D

Data Bits per Character 10
Data Connection Protection 16
Data Forwarding Character 30
Data Forwarding Criteria 42
Data Restraint 38
DCD to Data Timer Duration 43
DCP 16
Device Flow Control 31
Device Parity 10
Disconnect Character 39
DTR timeout 60
Dynamic Data Forwarding 41

E

Echo 30
Echo Control 41
Echo Mask 36
Echo Substitution Character 37
Echo Substitution Toggle Character 37
Editing 34
Editing Type 35
EIA Signalling Action 43
Esc Forwarding Delay Handling 40

F

fax service (3ComFacts) 2
Flow Control 59
Flow control 31, 33
Form Feed Padding 40

G

Group Subaddress 14

H

Hewlett-Packard Flow Control 41

I

Idle Disconnect Timer 39
Idle Timer Delay 30
Invitation to clear 15

L

Line Delete 34
Line Display 35
Line Feed 34
Line Feed Insertion After CR 33
Line Folding 32

M

Maximum Number of Autocall Attempts 14
    guidelines 5
Message Assembly 43
Mnemonic
    autocalling 20
    Table
        specifying Autocall Mnemonic 5

N

network supplier support 2
NUI Table
    guidelines 5
Number of Stop Bits 10

O

online technical services 1

P

PAD 53
PAD Data Restraint 33
PAD Mode 42
PAD port
    additional records 5
    subaddress 14
PAD profile parameter 51, 52
PAD Profile Table 5
PAD profiles 44, 51, 52
PAD Prompt Entry Number 13
    specifying 5
PAD Prompt table
    configure 25
    guidelines 5
PAD Prompt Text 26
PAD Recall 29
Padding After Carriage Return 32
Padding after LF 34
Page Wait 37
Parameter Number 51
Parameter Value 52
Parity 10, 39
Parity Treatment 36
PID 59
Port Speed 9
Port Statistics
    port state 53, 70

Profile Name
    specifying 5
Protection Level 16
Protocol Identifier 59

R

Reconnection Timeout 16
Reconnection Tries Limit 16
Remote PAD Parameter Table
    configure 49
Remote PAD Parameters
    Number 5, 13
    Table 5
Response delay 60
returning products for repair 4

S

SDLC
    autocalling mnemonic 21
Service Signals Control 31
Short Timer Duration 42
Speed
    port 9
Stop bits 10
Subaddress 14
    group 14

T

technical support
    3Com URL 1
    bulletin board service 2
    fax service 2
    network suppliers 2
    product repair 4
Terminal Control 12
    guidelines 5
Timer 30

U

URL 1

W

World Wide Web (WWW) 1

X

XOFF Character 38
XON Character 38
XON/XOFF
    transmitting
        using X.25 interrupt packets 23